

# CropLife

A BUSINESSPAPER FOR THE FARM CHEMICAL INDUSTRY

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## Annual Meeting . . .

### NAC Assn. Convention Program to Indicate Future Trends Within Pesticide Industry

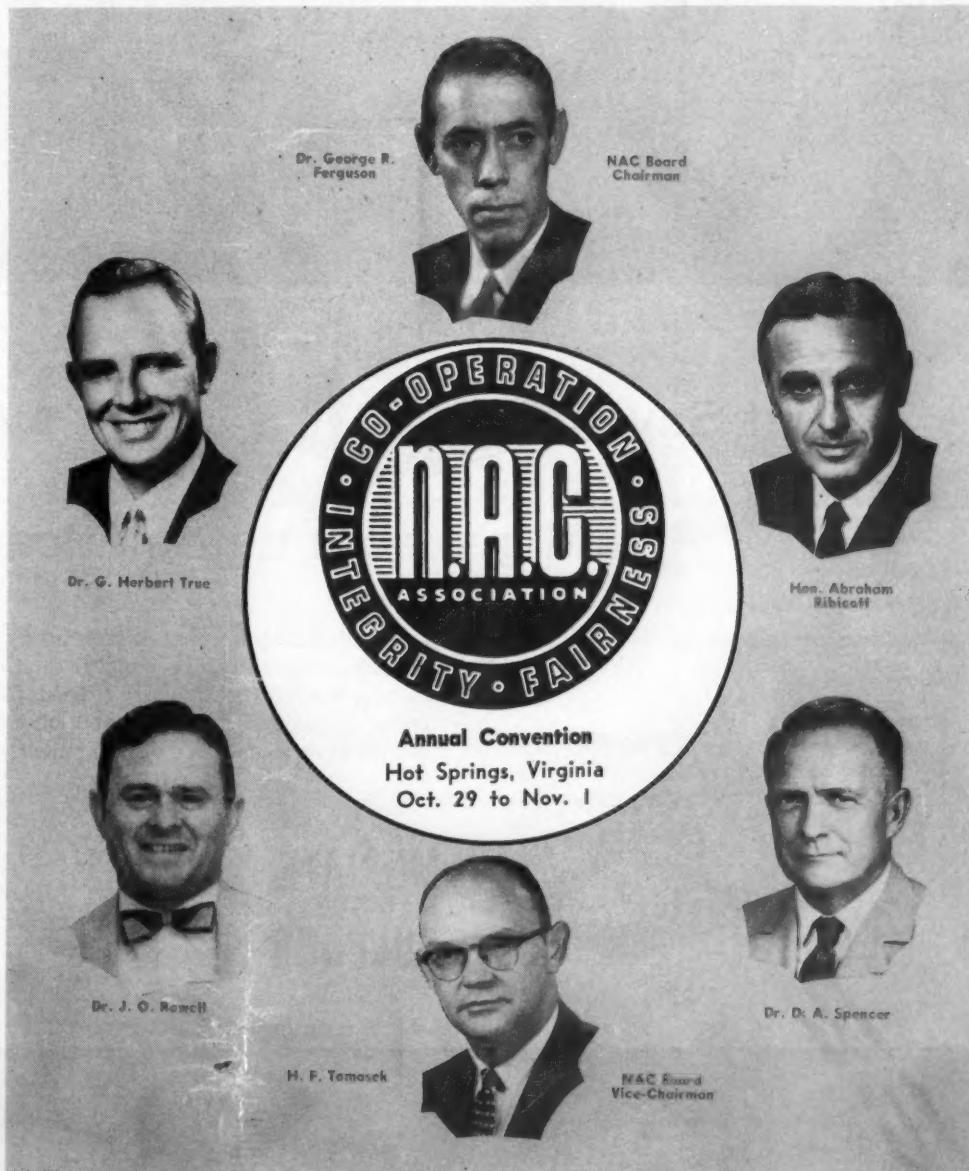
**F**EATURING a program to illuminate the present challenges faced by the pesticide industry, the National Agricultural Chemicals Assn. meets at the Homestead Hotel, Hot Springs, Va., Oct. 29-Nov. 1.

According to the tentative program issued by the NAC in September, speakers are to include Abraham Ribicoff, secretary of the U.S. Department of Health, Education, and Welfare, Washington, D.C.; Dr. D. A. Spencer, research biologist of the U.S. Fish and

Wildlife Service, Denver, Colo.; Dr. G. Herbert True, vice president, Visual Research, Inc., South Bend, Ind.; Dr. J. O. Rowell, extension entomologist, Virginia Polytechnic Institute, Blacksburg, Va.; and Miss Willie Mae Rogers, director of the Good Housekeeping Institute, New York.

Dr. George R. Ferguson, president, Geigy Agricultural Chemicals, Ardsley, N.Y., chairman of the NAC board of directors, will pre-

Turn to CONVENTION page 20



**NAC ASSN. CONVENTION LEADERS**—Prominent on the 1961 convention program of the National Agricultural Chemicals Assn. are the men shown above. All have parts on the three-day program beginning Monday morning, Oct. 30. Meeting headquarters are at the Homestead Hotel, Hot Springs, Va. Full details of the meeting are presented on this page and elsewhere in this issue.

**Capital Comments - - -**

## Washington Ears Sensitive to Hue and Cry Against Pesticides

By JOHN CIPPERLY

CropLife Washington Correspondent

**C**HARGES AGAINST pesticides seem to be never-ending. Washington observers are perhaps more sensitive to the pressures of propaganda groups than are similar numbers of people elsewhere, so the continuing slings and darts of criticism against the use of chemicals to control farm pests may be more likely to get some kind of sympathetic re-

sponse here than they might in many other portions of the U.S.

The latest king-sized battle is apparently being waged not in the U.S., but in the United Kingdom where wildlife enthusiasts and others are conducting a determined campaign to curtail the application of pesticides on crops because of "extreme hazards" to bird life, fish and mammals.

The crusade is being joined by

some U.S. newspapers and other opinion-formers, many of whom back up the demands that "something be done" to spare our birds and animals. Among the influential publications taking up the cry is the New York Times which in a recent editorial lauded the efforts of the British group.

Thus it appears again that the position of the U.K. scientists and the New York Times is one of sentimental opposition. There is little if any proof positive that proper use of hazardous economic poisons can be nailed down as the guilty party in the charge that our birds and bees and animals are being killed off through the ingestion of residues of pesticidal chemicals used in agricultural production.

As far as can be discerned there are no final conclusions to be drawn. Beating hearts for the robins, the finches, the trout and other animal

life do not come forth with adequate proof that these residues are any more hazardous than the common tom cat whose depredations on bird life are notorious.

In the absence of indisputable scientific data, it must be expected that this controversy may continue for years. It resolves itself in the meantime into the broad question of shall the world starve to preserve fish, game and wildlife? Efforts are made to make the matter all black or white . . . without any grey area.

In the meantime, the Food and Drug Administration is giving front office attention to activities of the Department of Interior in the pesticide chemical field.

This is significant since FDA has for many years worked closely with USDA in the field of canned fruits and vegetables, wherein USDA acts to provide its own inspection service on those products to assure that residue tolerance levels conform to FDA standards.

Unhappily, the intervention of editorial material from such eminent publications as the New York Times only adds fuel to the burning and emphasizes the all-black, all-white approach.

## Fertilizer Tonnage Down, But Nutrient Content Up in 1961

Consumption of fertilizer in the U.S. during the year ended June 30, 1960, was down 2.4% from the total of the preceding year, but the content of primary plant nutrients saw a small increase (0.6%) during the same period, according to a comprehensive report just issued by the U.S. Department of Agriculture. The total quantity of fertilizer consumed in the 1959-60 year was 24,887,415 tons, the report states.

This figure comprised 23,499,286 tons of products containing one or more of the primary nutrients, and 1,378,129 tons of secondary and trace nutrient materials marketed for retail consumption. The quantity of secondary and trace nutrient materials was 154,914 tons (12.7%) greater than the amount consumed in the previous fertilizer year.

The report, compiled by a statistical team composed of Walter A. Scholl, Caroline A. Wilker, and Marion M. Davis of the Agricultural Research Service of USDA, states that the decrease in the national consumption figure reflects the decreases reported in 31 of the 51 geographical areas covered in the compilation. A majority of the decreasing areas were larger users of fertilizers, whereas most of the increases came in areas consuming relatively smaller tonnages of fertilizer.

The proportional decline in the national consumption of primary nutrient fertilizers was about evenly divided between mixtures and direct-application materials, the report states. The use of mixtures decreased 2.6%, while materials went down 2.1%. A wide variation is seen, however, between the 25% increase in mixtures in the mountain region and a decrease of 18% in materials in Hawaii, the report points out.

Mixtures comprised 62.9% of the total tonnage. Some 1,870 grades were reported. The states east of the Mississippi River were below their respective tonnages of the year before, but consumption in most of the states west of the river was increased. Decreases in the former area ranged from 1% in Ohio to 14% in New Hampshire. Increases registered by states to the west of the river ranged from 1% in Iowa to 42% in New Mexico.



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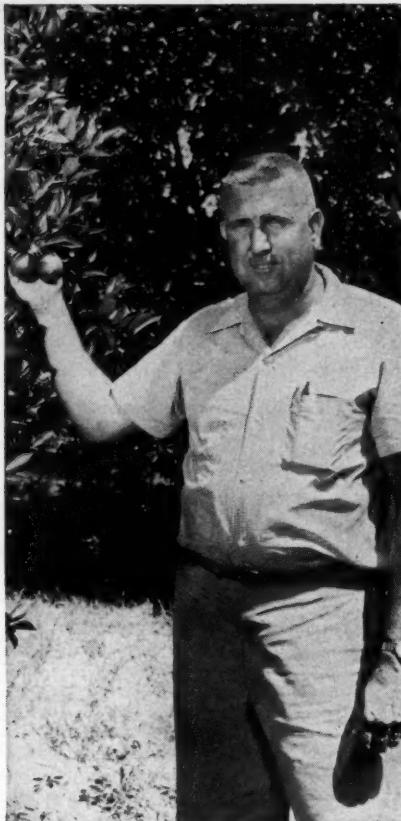
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**HERCULES POWDER COMPANY**  
INCORPORATED

# Woodbury Firm Shows Big Growth; Plans Greater Pesticide Output

A MODERN PESTICIDE company which has seen its sales volume grow in 1961 to a figure 300 times that of its first year of 1946 is the story of Woodbury Chemical Co. with headquarters in St. Joseph, Mo. From a modest beginning shortly after the close of World War II, when DDT had just been released for public use, H. A. "Herb" Woodbury, president, has guided his business to a place of prominence in the agricultural chemical field.

Actually, the company has grown right along with developments in pesticide technology. Beginning with DDT, the company now formulates all types of pesticides, including in-

**PESTICIDE ACTIVITIES**—Woodbury Chemical Co. conducts broad scope of activity. At right 2,4-D acid is being transferred from new warehouse at St. Joseph, to herbicide plant at different location. On opposite page, Fred Clayton, company entomologist, discusses control of corn rootworm beetle with George Boyd, aerial applicator. Woodbury truck has delivered load of methyl parathion near Davenport, Neb. At far right is filling, capping and labeling equipment for Woodbury's line of household insecticides.

secticides, weed killers, defoliants, and desiccants.

Woodbury consumes sizeable quantities of aldrin, chlordane, DDT, diel-drin, endrin, heptachlor, Malathion, Parathion, 2,4-D, and 2,4,5-T for for-

mulation into both liquid and granular forms. The company has five plant locations in St. Joseph, plus one in Denver, Colo., and two in Florida at Orlando and Princeton. The Denver manager is Leonard Everett, while Richard Hutchings manages the Florida operations. Today the company's employees range in number from around 125 at peak season to a year-round figure of about 50.

The company operates two testing laboratories in St. Joseph. One is primarily analytical (grains, foodstuffs, etc.) managed by C. C. Walker; the other deals with product control and research, with John Angel as chief chemist. Company labs also operate in Denver and Florida.

Key officials in the St. Joseph home office, in addition to the president, include V. L. Woodbury, vice president and treasurer; R. W. Douglas, vice president, sales; Ross Woodbury, purchasing agent and assistant secretary, and T. P. Barrett, office manager. Leonard Everett is secretary of the company. Another son, Reid Woodbury, is presently in the sales department.

Separation of plants is important to Woodbury. Liquid herbicides are formulated in one plant, managed by R. L. Wolfe, who also operates a nearby granular herbicide plant. Steve Mihelic heads the liquid pesticide plant and Dave Pritchett the granular pesticide facilities. Joe Willis takes care of the formulation of powders and dusts, as well as overseeing shipping operations. Frank Gibbons has over-all supervision of all St. Joseph plants.

Woodbury's reasons for plant separation are interesting. "First," Mr. Woodbury says, "there is no possibility of contamination of pesticides with herbicides when the plants are several blocks apart. Second, expansion of a particular facility is much easier when you don't have to push someone else out to expand—we just add on. Third, fire is a constant hazard in the ag chemical business. This way we reduce the possibility of a staggering loss and, even worse, of being unable to continue business."

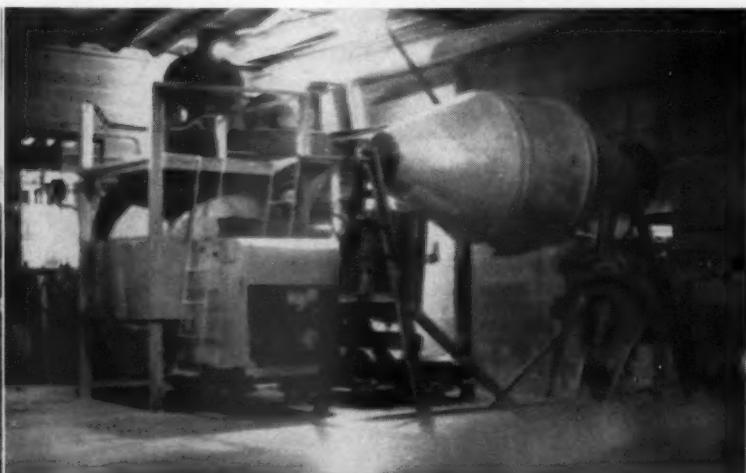
Woodbury Chemical is one of the larger manufacturers of granular pesticides and herbicides. Both granular plants have been, for several years, equipped for bulk handling of the base clays. From the bulk cars received from the mines to the holding bins to the mixers to the baggers, the clay and then the finished granules are moved in bulk by augers and conveyors. This results in high plant capacity and efficiency as well as lowering costs.

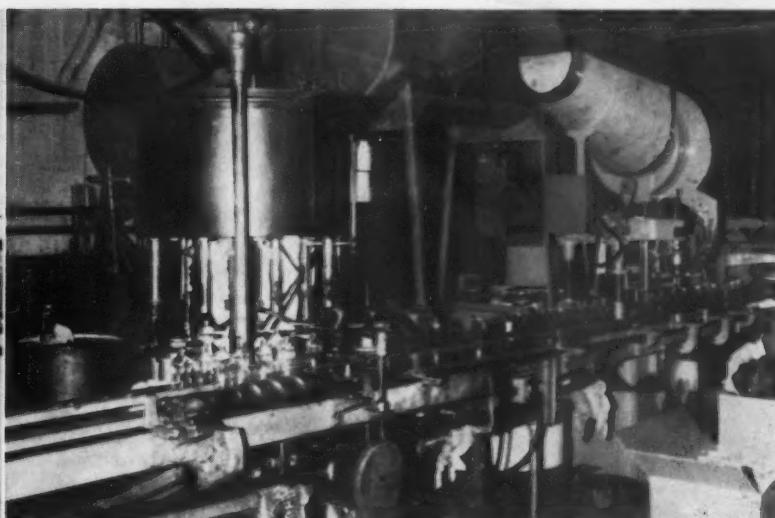
Diversification enables Woodbury to keep key employees busy all year round. "This is important to plant, office and sales personnel, so for years, we have jobbed industrial chemicals and formulated detergents, waxes, disinfectants, etc., both under the Woodbury label and private label," Mr. Woodbury says.

The company president is a busy man. But he finds time to be active in his church and civic affairs. He is also the first president of the Midwest Agricultural Chemicals Assn., an organization of formulators whose aims are to cooperate with state extension services in the education and



**WIDE-SCALE OPERATIONS**—At left, top photo, is portion of Woodbury's Orlando, Fla., plant. The 50-ft. stainless steel drying tower is a recent addition. At left is granular pesticide plant at St. Joseph. Bin in the foreground has capacity of 180,000 lb. of base clay. Below are pictures of company's general offices at St. Joseph, and view of impregnators and blenders in company's Denver, Colo., plant. Mixer in foreground is used for wettable powders, while larger blender is for pesticide granules.





use of agricultural chemicals, to publicize and explain the proper and safe use of new chemicals, and to counteract adverse publicity and "scare stories" which appear occasionally in the press.

In speaking of his company's operations, Mr. Woodbury says: "I believe that we owe much of our success to the fact that we are able to manufacture and ship almost anything in our line in truckload quantities, usually in 24 hours or less. In other words, we operate more from manufacturing capacity and raw material inventory than from finished inventory. This gives us a flexibility that I feel is most important in this business."

To illustrate this, Mr. Woodbury described an incident in the summer of 1959 (only a few months after fire had destroyed his five story office and warehouse building, but left the

scattered manufacturing plants undamaged).

An aerial operator in Marion, Ohio, called Dick Douglas, sales manager, at his home on a Saturday night, needing a truckload of Malathion for a corn leaf aphid infestation. Mr. Douglas arranged for a crew to be at work Sunday morning, for a truck and driver, and though formulation could not begin until confirmation of the order was received at 1 p.m. Sunday, a full load of 3,400 gallons was formulated, drummed, loaded and was on the road before midnight Sunday. By dawn Tuesday the shipment was at the airport in Marion, Ohio, over 600 miles from St. Joseph.

"Quality and service are our biggest selling points," says Mr. Woodbury. "Unfortunately, however, many midwestern farmers are so price conscious that they will buy their chem-

ical products on the basis of savings as little as 1¢ an acre." (A 15¢ differential on a gallon of 2,4-D, for instance, amounts to 1¢ an acre.)

Woodbury customers do get service, the president says. They have available the services of Fred Clayton, entomologist, for "same day" advice and recommendations. The company also provides for warehousing in the field and provides delivery trucks for use in the field during severe infestations.

Mr. Douglas adds that the company carries adequate inventories of raw materials, containers, and other supplies to meet any unexpected need. The company, he says, has been able to maintain a good working relationship with its distributors, dealers and aerial applicators.

The Woodbury company operates on terms of 3% 30 days, net 31. It makes no consignment or guaranteed

sales. "This is not necessary because of the speed of service given customers, and because of the firm stand of management against what it considers poor and expensive business practice," the president comments.

Plans for the company point toward continued expansion. "We believe that by operating regionally and in close touch with the needs of the regional market, we can, and will, continue to grow," Mr. Woodbury concludes.

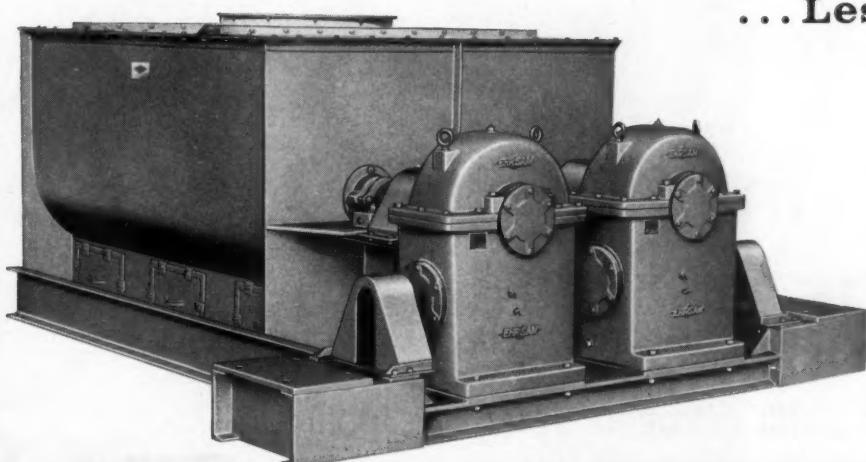
#### GETS 50-YEAR AWARD

Perry Bradley, district sales manager in Memphis for Virginia-Carolina Chemical Corp., was awarded a 50-year service emblem at the company's annual stockholders meeting Sept. 22. Mr. Bradley started with V-C as an office boy in Carteret, N.J., in 1911.



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# MEN MOVING AHEAD IN THE TRADE



J. G. Boyd



W. H. Parker

**J. G. Boyd** has been named manager of Swift & Co.'s agricultural chemical division at Greensboro, N.C. He succeeds **W. H. Parker**, who has been with the company for more than 48 years. Mr. Parker has been manager at Greensboro since May, 1946. Mr. Boyd joined Swift & Co. in 1938 at South Norfolk, Va.

After military service during World War II, he became assistant auditor at Swift's agricultural chemical division in Baltimore, Md. He held a sales position prior to his new assignment at Greensboro.

**R. E. Kendall**

U.S. Borax & Chemical Corp., Los Angeles, has appointed **R. E. Kendall** to the newly-created position of Canadian project manager, according to an announcement by **Dr. D. S. Taylor**, vice president. Mr. Kendall will be located in Saskatoon, Sask. He will coordinate engineering and geological efforts of the U.S. Borax-Homestake Mining Co. joint venture to complete studies relating to possible large-scale potash production in Saskatchewan.

**C. L. Friedmann** has been named to succeed Mr. Kendall as engineering manager at U.S. Borax & Chemical Corp.'s plant at Boron, Cal. Mr. Friedmann joined U.S.B.C.C. in June, 1960, as senior process engineer.

**Jack D. Shirley** has joined the agricultural chemicals department of Commercial Solvents Corp., according to an announcement by **Loy Everett**, sales manager of the department.

Mr. Shirley was previously associated with Spencer Kellogg & Sons, Inc. For 10 years he was an agriculture salesman for Swift & Co. in Missouri. Mr. Shirley will service CSC accounts in a four-state area comprising Missouri, Iowa, Kansas and Nebraska, making his headquarters in St. Louis, Mo.

**E. V. Stevenson** was elected chairman of the board of directors and **Norval Ellefson** vice chairman of Central Farmers Fertilizer Co., Chicago, Ill. They replace **D. A. Williams** and **E. O. Johnston**, chairman and

vice chairman, respectively, who asked not to be considered for re-election. Both men remain on the board of directors of Central Farmers.

Ortho Division of California Chemical Co. has announced appointments of the following:

**Richard W. Brooks** as sales representative in the Marion, Ohio, area. The announcement was made by **W. J. Majure**, Toledo, Ohio, Great Lakes District manager for Ortho.

**Walter E. Swartz** has become field agronomist for the division. He will work in the New England states and in New York state, according to **R. T. Wallace**, Ortho district manager, who made the announcement.

**Donald C. McGorman** has been promoted to general traffic manager of Northwest Nitro-Chemicals, Ltd., with office in Minneapolis, Minn. He was formerly assistant general freight agent-rates of the Minneapolis & St. Louis Railway, and a graduate of the College of Advanced Traffic, Chicago.

Shell Chemical Co. has announced the recent reorganization of its ammonia division, headquartered in San Francisco.



C. H. Plomteaux

Frank D. Kuenzly

monia division, headquartered in San Francisco.

Operation of the division's two plants, located at Pittsburg and Ventura, Cal., has been consolidated under the management of **Charles H. Plomteaux**, manager of the Pittsburg plant, according to **Lawrence M. Roberts**, division general manager.

**Frank D. Kuenzly**, manager of the Ventura plant, becomes operations



## Again...

New Solar nitrogen plant at Joplin, Missouri, dedicated to serving your nitrogen needs still better

The new Solar nitrogen plant at Joplin, Missouri, now extends Sohio service throughout the central part of the United States. The plant, constructed by Solar Nitrogen Chemicals, Inc., enables Sohio (acting as sales agent for Solar) to better serve the nitrogen needs of the fertilizer industry. It substantially increases availability of Solar nitrogen materials during peak seasons.

If you're a regular customer, you know that continuous improvements in service, delivery and product are SOP of the Solar-Sohio team. This leadership has contributed many "firsts" in the fertilizer industry during the past few years. In addition to the new Joplin plant, they have pioneered these improvements in service:

- First to give truck delivery of solutions and anhydrous.
- First to give bulk truck delivery of urea.
- A leader in the use of pressure, aluminum tank cars for nitrogen solutions.
- First to build large bulk storage to meet on-season demand of the industry.
- Further increased on-season availability by increasing capacity of Lima ammonia plant, urea unit and nitric acid unit.

Helping you solve fertilizer formulation problems is another area where the Solar-Sohio team can point to impressive achievements. For example, they ...

manager in the division's head office. Named as operations manager in the Ventura plant is **Albert N. Holcombe**, manager of the plant's technological department.

**James W. "Jim" Garrett** has been appointed south Alabama sales representative for Southern Nitrogen Co., the firm has announced. Mr. Garrett was formerly with the Georgia and Florida Railroad in freight solicitation in south Georgia, north Florida, and Alabama. He was reared on a farm in Georgia, and attended Gordon Military College in Barnesville, Georgia, and Valdosta



James W. Garrett

State College in Valdosta, Georgia.

Southern Nitrogen Co. has also announced the appointment of **James H. Manell** as sales representative for direct application nitrogen in South Georgia. He is a graduate of Valdosta State College.

Chipman Chemicals, Ltd., has announced a number of personnel changes. These were made by **D. R. Fraser**, president of the company.

**J. G. Hastings**, formerly general sales manager, will hold the newly-created post of marketing manager, with responsibility for the company's line of products and the sales and purchasing functions.

**L. M. Godfrey** has been appointed eastern region manager and will be responsible for agricultural sales east of the Manitoba-Ontario border as well as for production and adminis-

tration of Chipman Chemicals plants in eastern Canada.

**T. C. L. Jacob**, formerly Chipman's chief chemist, becomes technical manager. He will direct and plan the technical efforts of the company including use-development and development of formulations, chemical testing and control, safety procedures related to toxicity and chemical problems met in production. Working with Mr. Jacob will be **W. B. Fox**, formerly western development and technical service manager.

**J. R. Murphy**, formerly Ontario sales manager, has been appointed commercial products sales manager.

**M. M. Telford**, former Quebec and Maritimes sales manager, becomes Ontario sales manager.

Other appointments include **F. C. Birt** as western sales manager, and **G. R. Fraser** as western technical service manager.



A. Milton Sprague

T. S. Hostetter

**A. Milton Sprague** has been named to administer a new program being established by the agricultural chemicals division of Monsanto Chemical Co. whereby the company will develop a network of local facilities to formulate fertilizer materials to customer specifications. In his new position, Mr. Sprague will work with marketing personnel in assisting customers to set up and operate fertilizer bulk blending plants. In addition, he will be responsible for Monsanto-owned field units that supply formulations of ammonium nitrate and fuel oil for industrial purposes.

Succeeding Mr. Sprague as manager of the El Dorado, Ark., plant will be **Thomas S. Hostetter**, now assistant plant manager.

Monsanto has also announced that it will form a new sales district with headquarters at the company's offices at St. Louis, effective Nov. 1. **J. Paul Ekberg**, director of marketing for the agricultural chemicals division, named **William O. Butler**, now assistant manager of the St. Louis sales district, as the Chicago district manager.

**J. J. Pointer** has been appointed assistant to the vice president of the chemical division and farm fertilizer sales manager for the Southeast and Southwest, **W. R. Ashburn**, president of Smith-Douglass Co. has announced.

Mr. Pointer will head the Smith-Douglass fertilizer sales organization in the states of Virginia, North and South Carolina, Texas, Oklahoma, Louisiana and Kansas, reporting to **J. H. Culpepper**, vice president for fertilizer products.

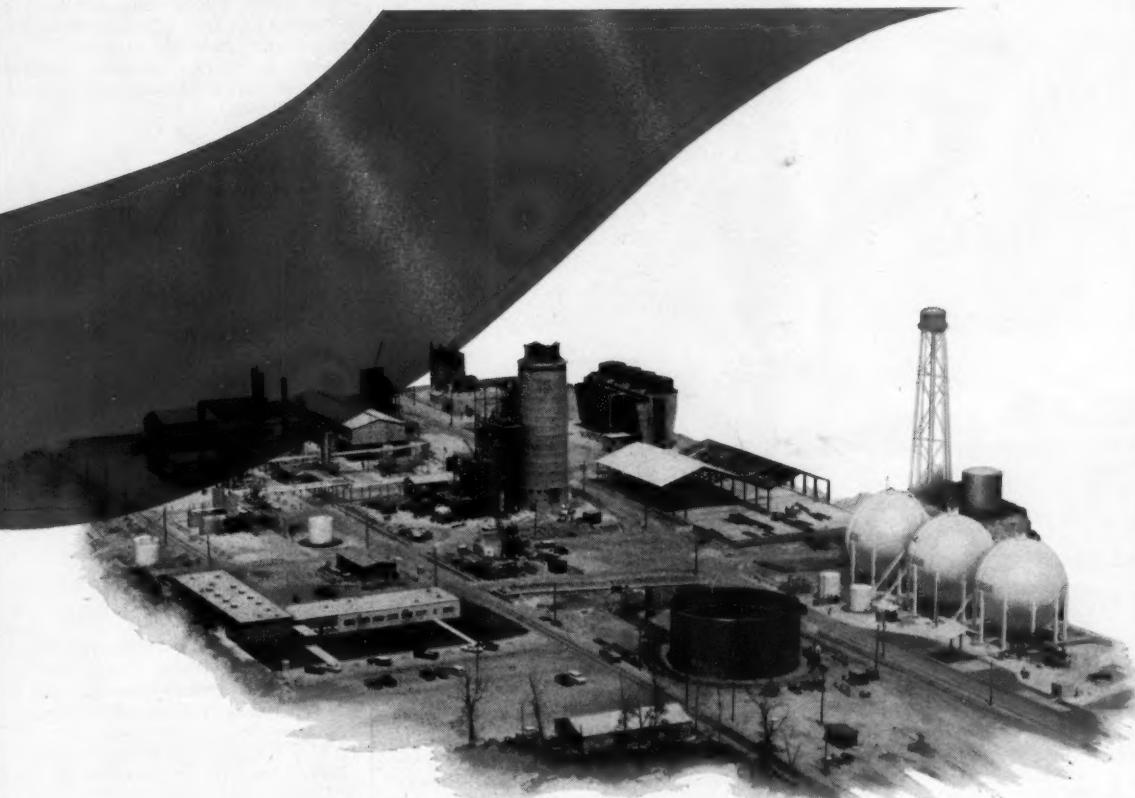
As assistant to **R. S. Rydell**, vice president of the company's chemical division, he will supervise the administration of S-D operations at Texas City, Texas, including coordinating fertilizer production with domestic and export distribution.

**Dr. Roy D. Bronson** has been named chief of the soils and fertilizer research branch in the Tennessee Valley Authority's division of agricultural relations at Muscle Shoals, Ala. He succeeds **Dr. George Stanford** who resigned to join the Hawaiian Sugar Planters' Assn.

Dr. Bronson came to TVA from Honduras where for the past year and a half he was in charge of soils and chemistry work for United Fruit Co.'s Division of Tropical Research. He formerly was associate professor of agronomy at Purdue University, and was on leave from that post while in Honduras.

Michigan Chemical Corp. has announced the appointment of **L. Dale McCown** as a product development representative of the company's marketing and development division. He is a chemistry graduate of Michigan College of Mining and Technology in 1954, and joined Michigan Chemical in 1958.

Michigan Chemical has also announced the election of **Fred W. El-**



Photographed July 29 before completion.

## something new from the Solar-Sohio team

- Pioneered research in liquid fertilizer solubility.
- Devised practical but accurate shortcuts for methods of liquid formulation . . . i.e., triangulation formulation, formulation pads.
- Led in researching nitrogen solutions solubility and vapor pressure.
- Pioneered special high fixed-to-free nitrogen solutions for dry and liquid manufacturing for complete fertilizers.
- Led in promoting the use of urea-ammonium nitrate solutions to reduce formulation costs of liquid fertilizers.

We believe this record of leadership shows two especially significant facts about our company.

First is a genuine feeling of responsibility to serve your nitrogen needs as completely and as efficiently as we know how. Second is a thorough knowledge of agriculture . . . a real insight into your fertilizer formulation needs.

Right now is a good time to line up your future nitrogen needs. Call or write your "Man from Sohio" for a full line of Solar nitrogen products, including all grades of urea, ammonia and nitrogen solutions. Two plant locations assure dependable supply, quick delivery.



**SOLAR NITROGEN CHEMICALS, INC.**  
Sohio Chemical Company, Agent

Sales Offices: Lima, Ohio and Kansas City, Mo.  
Plants at: Lima, Ohio and Joplin, Mo.



**L**lott as executive vice president. He was formerly group vice president of H. K. Porter Co., Inc., Pittsburgh.

**R. Sidney Braucher** has been made agricultural chemicals sales manager in the Los Angeles office of Dow Chemical Co., and **Silas K. Skinner** has moved up to the similar post in the Seattle office, according to announcement by **W. W. Allen**, manager of Dow's agricultural chemicals sales.

Mr. Braucher succeeds **R. B. Korsmeyer** who was recently named manager of sales planning, development and education for the agricultural sales department at Midland, Mich.

Armour Agricultural Chemical Co. has announced appointments in its Columbus, Ga., and Cincinnati, Ohio, operations. **H. Vise Miller**, vice president and general manager of the firm's fertilizer division, reports that

**Oscar N. Carmichael** has been named assistant division manager at Columbus, and **Robert A. Cannon**, division credit manager. In Cincinnati, **Harold S. Rose** was named assistant division manager.

**Dr. John E. Greenfield** has been promoted to section head of agricultural chemicals market research for The Dow Chemical Co. His appointment was announced by **J. W. Everson**, manager of market research.

**Edward A. Knaggs** has been appointed director of research for the industrial chemicals division of Stepan Chemical Co., Northfield, Ill. Mr. Knaggs had been associate technical director. He previously was chief chemist for Ninol Laboratories, Inc., joining Stepan in 1957 when Ninol was merged with Stepan Chemical.

**Robert C. Hills** was elected presi-

dent of Freeport Sulphur Co. on Sept. 28, it was announced by **Langbourne M. Williams**, chairman of the board. Mr. Hills succeeds **Charles A. Wight**, now vice chairman of the board. The former joined Freeport in 1934, was made a vice president in 1950 and executive vice president the next year.

**C. Robert Couch** has been appointed technical adviser to the vice president, eastern operations, for Climax Molybdenum Co., according to an announcement made Sept. 29 by **Lars E. Ekholm**, vice president. Mr. Couch had joined American Metal Climax, Inc., the parent company, in 1957.

**Dr. Paul F. Hoffman** has been named product sales manager for pesticides, in the agricultural chemicals division of Monsanto Chemical Co., St. Louis. He was formerly in the division's development department as manager of development for fungicide

and insecticide products. He succeeds **James W. Starrett** who resigned to go into business for himself.

In connection with Dr. Hoffman's transfer, **Dr. L. H. Hannah** will assume entire responsibility for the pesticide development program including insecticides and fungicides.

**Dr. Robert O. Arias** has joined the Niagara Chemical Division of FMC Corp. as a research entomologist and will be located at the firm's research and development laboratory at Richmond, Cal. In his new post, Dr. Arias will be concerned with both field and laboratory development on the control of agricultural pests associated with the Western states.

Promotions for **Benjamin W. Hancock** and **Walter J. Thompson** of the Niagara Falls plant of Hooker's eastern chemical division have been announced by **Maynard L. Parker**, works manager. Mr. Hancock has been named works manager of the Jeffersonville, Ind., plant of the firm's phosphorus division, responsible to **Robert E. Noble**, division general manager. Mr. Thompson will succeed Mr. Hancock.

International Ore & Fertilizer Corp. has announced the appointment of **G. D. Grossman** as manager of its Latin-American division. Mr. Grossman is presently opening Interoire's new offices in Rio de Janeiro, Brazil.

**James F. Bourland** has been appointed assistant general manager of American Cyanamid Co.'s agricultural division, it was announced Oct. 3 by **Wilbur G. Malcolm**, board chairman and chief executive officer. Dr. Bourland will make his headquarters in the company's new agricultural center at Princeton, N.J. Dr. Bourland joined Cyanamid in 1941.

The appointment of **O. W. Andrews** to the newly-created position of director, marketing services for the chemical division of Pittsburgh Plate Glass Co., has been announced by **Chris F. Bingham**, vice president, sales-chemical division. Mr. Andrews was formerly district sales manager at San Francisco. He will be headquartered in the company's general offices in Pittsburgh.

**Gale E. Allen** has been named executive vice president of Highway Equipment Co., Cedar Rapids, Iowa, according to an announcement by **C. H. Jordan**, president. Mr. Allen joined the firm in 1958 as general sales manager, and will continue many of the duties of this post along with administrative responsibility for the entire operation of the company.

The appointment of **George N. Palmer** as mid-Atlantic district field sales manager for agricultural chemicals produced by Allied Chemical's General Chemical Division has been announced by **Thomas W. Collins**, agricultural chemical sales manager.

Mr. Palmer will supervise sales in New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia and West Virginia, with headquarters at General Chemical's Camden, New Jersey, sales office.

General Chemical produces insecticides, weed killers and agricultural chemical specialties.

**Thomas M. Newell**, formerly a chemical consultant at Helena, Mont., has joined the marketing department of Monsanto Chemical Co.'s Inorganic Chemicals Division as a technical service specialist. **J. E. Crawford, Jr.**, division director of marketing, has announced.



Bartlett and O'Bryan Fertilizer Company manufactures complete dry and liquid fertilizers in this up-to-date plant at Owensboro, Ky. Read how advanced SPENSOL GREEEN\* Ammoniating Solutions help them control corrosion:

## Progressive 10,000-Ton Kentucky Plant Chooses Corrosion-Resistant SPENSOL GREEEN

**Supplying the plant food needs** of farmers in Western Kentucky, Bartlett and O'Bryan Fertilizer Company offers a broad line of fertilizers. Their 10,000-ton capacity plant (above) which began operation in early 1953 keeps busy manufacturing complete fertilizers in both dry and liquid forms. In addition, they also feature a full selection of straight nitrogen Spencerizers. Credited with pioneering direct application ammonia and solutions in their area, this progressive firm provides extensive bulk spreading and application services.

**With heavy production** schedules to meet, Bartlett and O'Bryan officials know the importance of guarding manufacturing and storage equipment against corrosion damage. They specify genuine

SPENSOL GREEEN — the corrosion-resistant ammoniating solutions. Comparison shows that SPENSOL GREEEN'S advanced corrosion inhibitor can greatly prolong the life of your valuable plant equipment.

**Improved corrosion protection** costs you nothing extra when you use genuine SPENSOL GREEEN. So, why let the unseen ravages of corrosion shorten the life of your valuable production and storage facilities? Avoid expensive repair bills and unnecessary down time by controlling corrosion with corrosion-resistant SPENSOL GREEEN Ammoniating Solutions. Contact your Spencer representative right away.

\*A registered trademark of Spencer Chemical Company.

Insist on

# SPENSOL GREEEN

CORROSION-RESISTANT AMMONIATING SOLUTIONS

Spencer Chemical Company

Dwight Bldg., Kansas City, Missouri

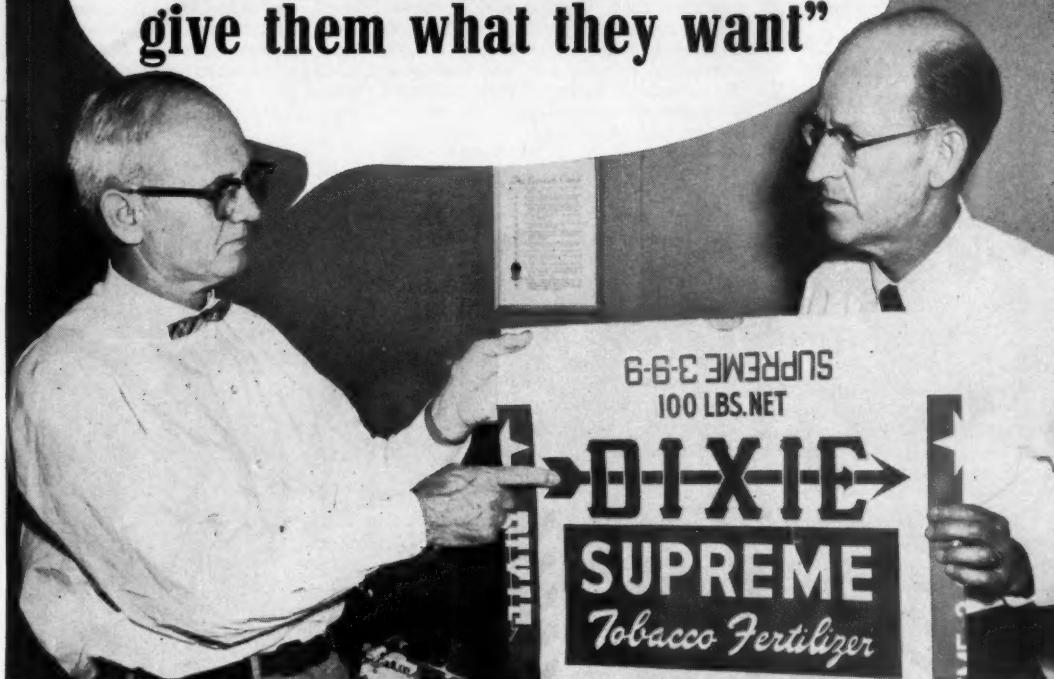
Sales Offices: Atlanta, Ga., Chicago, Ill., Memphis, Tenn., Omaha, Nebr., Kansas City, Mo.

Works: Pittsburgh, Kans., Henderson, Ky., Vicksburg, Miss.



"Our fertilizer customers know plant food ingredients. They want the extras . . . because extras pay off . . .

## Sul-Po-Mag helps us give them what they want"



**President N. S. Stokes, Dixie Chemical Corp., New Bern, N. C., tells why SPM is a sound profit ingredient**

"Our company has always recommended Sul-Po-Mag in tobacco fertilizers and we are emphatic in our recommendations of SPM as a side-dresser. It is our opinion that all crops in our area, at some time or another during the growing season, suffer from lack of adequate magnesium. Therefore, we believe that SPM can be used effectively and profitably in general crop fertilizers.



D. C. Flowers (right), vice president in charge of sales, and Walton Dennis, IMC representative, report that sales increases have been greatest in their Sul-Po-Mag grades.

"Since the inclusion of Sul-Po-Mag in the formulation of our premium grades of fertilizer, our sales have consistently increased, and 90% of the increase has been in the Sul-Po-Mag grades.

"Sul-Po-Mag is used at Dixie

Chemical Corporation as an ingredient in complete mixed fertilizers . . . and also as a direct application material, particularly for tobacco.

"State recommendations and state laws require low chlorine content in tobacco fertilizers. Since the potash in Sul-Po-Mag is in the sulphate form — with low-chlorine analysis — this material meets both of these requirements. Most important, Sul-Po-Mag supplies magnesium in a readily available, 100% water soluble form.

"Our salesmen and management personnel have attended several IMC sales clinics held for their customers. These have been most helpful and are preferred by our personnel to other similar meetings. We have effectively used all of the selling aids provided by IMC . . . and have mailed out several thousands of SPM

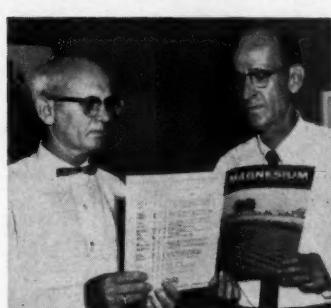
folders. "Magnesium, A Major Plant Food," is required reading for all of our sales force.

"Further, we have received technical advice and assistance from IMC in putting on our own sales meetings. Full Orbit brochures covering a number of pertinent subjects have been helpful to us in our business."

Fight Magnesium Lag — for profit! Sul-Po-Mag's magnesium, potash and sulphur are 100% water soluble . . . resist leaching . . . feed the crop all season long. To step up your premium plant food sales, build direct application volume with SPM, call your IMC representative today!



Walton Dennis, D. C. Flowers and J. E. Parker discuss Sul-Po-Mag promotion material requirements for their salesmen and dealers.



Dixie Chemical Corporation executives state that IMC's Magnesium booklet is one of their salesmen's top selling aids.

## SPM SUL-PO-MAG®

All farmland needs double sulphate of potash-magnesia. SPM contains 18.5% magnesia, 22% potash in sulphate form, 22% sulphur—and less than 2.5% chlorine.

### How promotes Sul-Po-Mag for you!



IMC continues to offer you the complete circle of Full Orbit Services. Recheck these services with your IMC representative — many of them have been expanded, many more are all new!

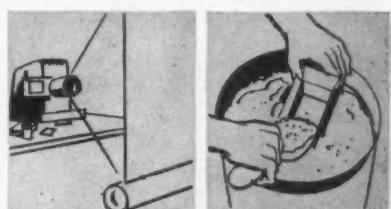
IMC also promotes Sul-Po-Mag direct to your dealers in their business publications. And — IMC promotes direct to your farm customers — warns of "Magnesium Lag" — through a heavy national, regional and local advertising schedule!

### IMC promotes SPM for your dealers



It's the industry's most comprehensive dealer-help program! (1) Handy SPM flash cards give your dealers and their customers the complete SPM sales story fast and factually! (2) Authoritative SPM Bulletins reach county agents and vo-ag teachers. Loaded with research and university tests, the Bulletins prove SPM benefits, help sell for your dealers. (3) Specific SPM ads are beamed at potato, citrus, vegetable, fruit and tobacco farmers. (4) Dozens of local dealer materials and crop folders help your dealers move more Sul-Po-Mag!

### IMC promotes SPM to your farm customers



(1) IMC supplies dealers with complete Sul-Po-Mag farmer-dealer meeting kits that outline every step of the way in holding a successful meeting. Available with the farmer-dealer meeting kit is the well-known "Magnesium — Major Plant Food" slide film with script. (2) IMC supplies recommendations on proper use and application rates . . . helps set up soil test service your dealers can offer their customers.

Want more SPM promotion and product facts? Call your IMC representative now!



**INTERNATIONAL MINERALS & CHEMICAL CORPORATION**

*Agricultural Chemicals Division, Materials Dept. • Administrative Center • Skokie, Illinois*

# PRODUCTION PROCESS PATENTS

2,999,006

**Process for Preparing Substantially Dry Crystalline Diammonium Phosphate.** Patent issued Sept. 5, 1961, to William A. Hedges, Plant City, Fla., assignor to Swift & Co., Chicago, Ill. A process for preparation of substantially dry crystalline diammonium phosphate comprising: Partially neutralizing phosphoric acid with ammonia to produce mono-ammonium phosphate; preparing a moist crystalline product of said mono-ammonium phosphate, said product containing from about 10 to 15% moisture; and further ammoniating said moist crystalline product with anhydrous ammonia to produce, without further processing, substantially dry crystalline diammonium phosphate.

2,999,008

**Purification of Carbon Dioxide for Urea Synthesis.** Patent issued Sept. 5, 1961, to V. B. Diebold, Cincinnati, assignor to Vulcan-Cincinnati, Inc., Cincinnati. In a process of purifying substantially pure, gaseous, carbon dioxide containing hydrogen, carbon monoxide and methane as contaminants to obtain a pure carbon dioxide especially suitable for the production of urea from carbon dioxide and ammonia, the step of passing the impure carbon dioxide in admixture with molecular oxygen into contact with a catalyst of a metal selected from the group consisting of platinum, rhodium and palladium at a pressure within the range from 100 P.S.I.G. to 300 P.S.I.G. and at an initial temperature within the range from 225°F. to 700°F. whereby the impurities are oxidized, cooling the reaction mixture to a temperature within the range from 40°F. to 150°F. to condense water and separating water therefrom, the amount of molecular oxygen admixed with the impure carbon dioxide being from 0.5 to 2.0 times that stoichiometrically required to convert the hydrogen to water, the carbon monoxide to carbon dioxide and the methane to carbon dioxide and water.

2,999,009

**Purification of Magnesium Nitrate Dehydrating Solution Employed in Nitric Acid Manufacture.** Patent issued Sept. 5, 1961, to Robert J. Bechtel, South River, and Robert M. Brooks, Milltown, N.J., assignors to Hercules Powder Co., Wilmington, Del. In the process of producing concentrated nitric acid from weak aqueous nitric acid by employing concentrated magnesium nitrate solution as the dehydrating agent, in which process nonvolatile impurities gradually accumulate in said magnesium nitrate solution to interfere with its dehydrating function, the improvement comprising withdrawing magnesium nitrate solution contaminated with nonvolatile impurities from the nitric acid concentration system, diluting the withdrawn solution with water to obtain a dilute magnesium nitrate solution containing not more than about 30% by weight of magnesium nitrate, adjusting the pH of the diluted magnesium nitrate solution to a value between 2 and 6, separating purified magnesium nitrate solution from the precipitate which forms in the resulting diluted magnesium nitrate solution of pH value between 2 and 6, and recycling the purified magnesium nitrate solution to the nitric acid concentration system.

2,999,010

**Manufacture of Superphosphoric Acid.** Patent issued Sept. 5, 1961, to Marcus M. Striplin, Jr., and David McKnight, Florence, and Ellis C. Marks, Sheffield, Ala., assignors to Tennessee Valley Authority. An improved process for the production of superphosphoric acid which comprises the steps of burning phosphorus in air; passing the resulting hot vaporous phosphorus pentoxide mixture upward through a vertical hydration zone; introducing a relatively cool condensate of dilute phosphoric acid from a later-mentioned step into said hydration zone as a spray of free-falling droplets; introducing a spray of water into said hydration zone at positions therein spaced vertically above the position of said acid introduction; adjusting the relative proportions of said acid and said water introduced so as to maintain a concentration of about 72% to 79% P<sub>2</sub>O<sub>5</sub> in collected droplets of the resulting superphosphoric acid; withdrawing said superphosphoric acid from a lower part of said hydration zone; withdrawing a hot, gaseous effluent from said hydration zone at an upper part thereof; condensing a more dilute phosphoric acid from said effluent; and returning the resulting relatively cool, dilute phosphoric acid to said hydration zone as a spray.

2,999,015

**Method and Apparatus for Use in the Manufacture of Mixed Fertilizer.** Patent issued Sept. 5, 1961, to Everett N. Mortenson, Chicago, Ill., and Ernest G. Wagner, Jr., Portland, Ore., assignors to Swift & Co., Chicago. In the manufacture of a mixed fertilizer using ammonia-ammonium nitrate solution as the source of nitrogen, the process comprising forming a stream of fertilizer solids flowing through a reaction zone, passing a flow of air in said zone counter-current to said stream of solids, introducing a concentrated mineral acid selected from the group consisting of sulphuric acid and phosphoric acid into said stream at an upstream point in said zone, and introducing ammonia-ammonium nitrate solution into said stream at a point downstream of the introduction of said acid, whereby a portion of the ammonium of said solution will be vaporized downstream and the vapors carried upstream by said countercurrent flow of air to partially neutralize said acid moving in said stream to form an acid salt and to heat the solids for the vaporization of ammonia at said downstream point, and said acid salt will move downstream and agglomerate said solids and react with another portion of ammonia from said solution to completely neutralize the acid salt to produce a normal ammonium salt.

2,992,967

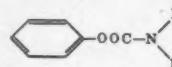
**Insecticidal Compositions Comprising Condensates of Hexachlorocyclopentadiene with 1,2-Dichlorobutene-3.** Patent issued July 18, 1961, to Albert H. Haubein, Christiana, Del., assignor to Hercules Powder Co., Wilmington, Del. The method of combating insects which comprises applying to insects and their habitats a composition comprising 5-(1,2-dichloroethyl)-1,2,3,4,7,7-hexachlorobicyclo [2.2.1]-2-heptene, said compound

being the Diels-Alder adduct of hexachlorocyclopentadiene and 1,2-dichloro-3-butene, and a carrier therefor.

2,995,487

**Synergistic Insecticidal Compositions.** Patent issued Aug. 8, 1961, to Howard A. Jones and John A. Garman, Baltimore, Md., and Berton C. Dickinson, Lyndonville, N.Y., assignors to FMC Corporation, New York.

The method of killing insects which comprises applying to the insects and their habitat a synergistic insecticidal composition comprising O,O-dimethyl O-(2-chloro-4-nitrophenyl) - thiophosphate and a carbamate ester of the general formula:



wherein R is selected from the group consisting of furfuryl, isopropyl and tert-butyl radicals, said ingredients being present in a ratio of about 1 part of said thiophosphate to about 5 parts of said carbamate.

## Industry Trade Marks

The following trade marks were published in the Official Gazette with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

**Telodrin**, in capital letters, for insecticides. Filed Oct. 24, 1960, by Shell Oil Co., New York. First use Oct. 5, 1960.

**Dipan**, in capital letters, for chemical composition used as an ingredient for a crabgrass killer. Filed Dec. 12, 1960, by Eli Lilly & Co., Indianapolis, Ind. First use Nov. 18, 1960.

**Montrel**, in capital letters, for organic phosphorus product and formulations thereof, said product being useful as a parasiticide, especially as an insecticide and active constituent of insecticidal formulations. Filed Aug. 31, 1959, by The Dow Chemical Co., Midland, Mich. First use July 20, 1959.

**Waylay**, in capital letters, for agricultural insecticide. Filed July 21, 1960, by Stauffer Chemical Co., New York. First use July 13, 1960.

**Aquathol**, in capital letters, for herbicide for use in bodies of water. Filed Dec. 28, 1960, by Pennsalt Chemicals Corp., Philadelphia, Pa. First use May 27, 1960.

**Trelease**, in hand-drawn outline letters, for chemical preparations useful in exterminating weeds. Filed June 30, 1959, by Amchem Products, Inc., Ambler, Pa. First use Feb. 9, 1959.

**Phosfon-D**, in capital letters, for chemical height-retardant for Chrysanthemums. Filed June 1, 1960, by Virginia-Carolina Chemical Corp., Richmond, Va. First use Feb. 25, 1960.

**E-Day**, in capital letters for rodenticide. Filed Oct. 6, 1960, by Winston Sales Co., Inc., Chicago, Ill. First use Aug. 9, 1960.

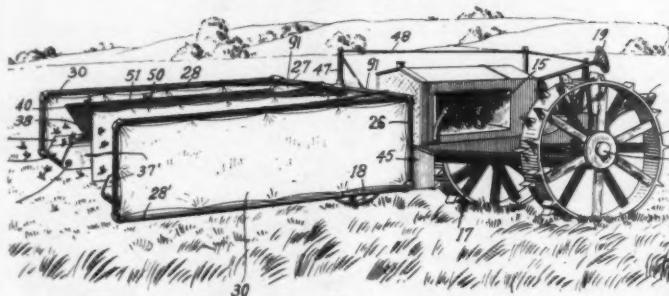
**Novocide** in capital letters, for antibiotic for use to control bacterial wilt on agricultural products. Filed Jan. 9, 1961, by The Upjohn Co., Kalamazoo, Mich. First use Oct. 13, 1960.

**Shrub-Tone**, in capital letters, for fertilizer. Filed Jan. 3, 1961, by the Espoma Co., Millville, N.J. First use April 20, 1960.

**Design, with letters IMC in six-sided figure**, for fertilizer and fertilizer ingredients. Filed Jan. 16, 1961, by International Minerals & Chemical Corp., Skokie, Ill. First use September, 1960.

## Pest Control Patents

From Days Gone By



**A**N INVENTION patented in 1919 for "harvesting grass-hoppers" was for the dual purpose of controlling their numbers, and also to serve as food for poultry. The gadget, described by its inventor, W. D. Kemp of New York, as "an improved agricultural implement," was composed of an arrangement of screens, wires, a storage battery, conveyor belt and a receptacle for the dead 'hoppers. The device was to be operated on the front end of a tractor which provided the motive power.

According to the description in the patent papers, the device when run through an infested field, would scoop up the insects, whisk them through one-way curtains, and land them on an electrified screen which would cause their instant death. The bodies would then slide down an inclined screen to a conveyor belt which would carry them to the rear of the machine where they would land in receptacles and become chicken feed.

The inventor claimed that it would not be necessary to stop the machine in its travels across a field. He suggests use of a marker to be used in the field "so that on its next round, the implement will not overlap ground already worked."

Claims made in the patent were not at all timid nor reserved. "It is apparent that all of the grasshoppers in the path of the harvester are eventually driven into contact with the live wires and are killed in such a manner as to permit their being removed and dried, and subsequently utilized as food for poultry," the patent says.

Date Aug 1961 Nitrogen 12% P<sub>2</sub>O<sub>5</sub> 12% K<sub>2</sub>O 12%

## Fertilizer Formula # 10

| Pounds | Materials  | Analysis |   |        | Pounds per ton |   |        | Units per ton |   |         |        |
|--------|--|----------|---|--------|----------------|---|--------|---------------|---|---------|--------|
|        |  | Nitrogen | Available P <sub>2</sub> O <sub>5</sub> | Potash | Nitrogen       | Available P <sub>2</sub> O <sub>5</sub> | Sulfur | Nitrogen      | Available P <sub>2</sub> O <sub>5</sub> | Magnes. | Potash |
| 381    | Ammonium Sulfate<br>Nitrogen Solution<br>Sulfuric Acid-66%<br>Superphosphate<br>Superphosphate<br>Potash | 21       |   |        | 80             |   |        | 4             |   |         |        |
|        |  |          | 20                                      |        |                |   |        |               |   |         |        |
|        |  |          | 46                                      |        | 60             |   |        |               |   |         |        |

# What's the best formula?

Improve those high nitrogen formulas with USS Ammonium Sulfate for the top units of nitrogen. USS Ammonium Sulfate makes formulating easier, offers better-conditioned mixes and maintains higher production rates—because USS Ammonium Sulfate is dry, stable, economical and easy to handle. When you figure those high nitrogen grade formulations for this fall—think of USS Ammonium Sulfate. USS Ammonium Sulfate is guaranteed 21% nitrogen and 24% sulfur. Fast, dependable service readily available from several plants. Contact your USS Chemical representative or nearest USS Chemical Sales Office: Pittsburgh, New York, Chicago, Salt Lake City and Fairfield, Alabama. Place your order now for USS Ammonium Sulfate—another quality product of United States Steel.



**Ammonium Sulfate**

TRADEMARK



**GENTLEMEN OF SAFETY**—Appearing on the program of the recent fertilizer safety school for supervisors at Wilmington, N.C., were E. O. Burroughs, Jr., left, F. S. Royster Guano Co., Norfolk, Va.; Curtis A. Cox, vice president, Virginia-Carolina Chemical Corp., Richmond, Va., and W. C. "Billy" Creel, safety director, North Carolina Department of Labor, Raleigh, N.C. All are well known exponents of safety in the fertilizer industry, and have participated in previous conferences, at one of which the above photo was taken.

## Helpful Ideas Plentiful as Safety School Series Begins

Some 59 fertilizer plant supervisory personnel were in attendance at the safety school held Aug. 24-25 at Wilmington, N.C., according to a report by W. C. Creel, safety director of the North Carolina Department of Labor, and chairman of the training project. He reports that the school was "most successful, not only in its attendance, but also in the quality of presentations and participation in the program by those present."

The school was divided into three units, one covering the basic ideas of accident prevention and supervisory training; one on fire protection in plants, and one on the handling and use of hazardous liquids and materials.

Participants on the program in-

cluded: J. E. Berry, Allied Chemical Corp., Hopewell, Va.; Ed O. Burroughs, Jr., F. S. Royster Guano Co., Norfolk, Va.; E. P. Cain, Allied Chemical Corp., Greensboro, N.C.; W. F. Combs, Smith-Douglas Co., Norfolk; Curtis A. Cox, Virginia-Carolina Chemical Corp., Richmond, Va.; C. F. Ireland, Southern Nitrogen Co., Savannah, Ga.; Gaither T. Newnam, Smith-Douglas Co., Norfolk; Marshall E. Petersen, National Safety Council, Chicago; Hugh S. Surles, Jr., Planters Cotton Oil & Fertilizer Co., Rocky Mount, N.C.; A. E. Burnett, F. S. Royster Guano Co., Wilmington, N.C.; C. S. Griffith, Virginia-Carolina Chemical Corp., Cincinnati, Ohio, and a number of representatives of the North Carolina Labor Department, along with Mr. Creel, director.

Attendants at the meeting took part in question-and-answer panels, other discussion groups, and heard talks on the economics of safety.

Pointed out strongly at the meeting was the high cost of accidents. In a presentation by Mr. Creel, some of the cost factors involved in the lack of a safety program were outlined. "Accident prevention is a basic part of a plant operation," he told the group. "One of the most important elements of an accident prevention program is that of cost."

"While the prevention of human misery and suffering is the most important reason for accident prevention, a business must make a profit if it is to continue operating. Therefore, management must be shown that a safety program saves money for the company," he said.

Mr. Creel said that workmen's compensation insurance is probably the most tangible evidence of the cost of accidents to a plant. Three basic parts of compensation should be kept in mind by management at all times, he declared. These categories include the manual rate, the experience rating, and finally assigned risk.

The speaker described the portions of workmen's compensation insurance as follows:

**Manual Rate**—The manual rate is the industry rate per \$100 payroll set annually by the commissioner of insurance after determinations by the Compensation Rating and Inspection Bureau. (The North Carolina rate is \$1.71.)

**Experience Rating**—On yearly premiums of \$500 or more, there is an experience rating plan. If over the experience period, usually three years, a plant has cost claims greater than the industry average, there is a debit which means the company must pay additional premium costs. If the cost experience is better than the industry average, there is a credit which reduces insurance cost.

**Assigned Risk**—A commercial insurance company can drop an account for any cause. If three or more companies refuse to sell compensation insurance, a plant can request that insurance be assigned to a big commercial company compensation rating and inspection bureau. This is called "Assigned Risk" and means a surcharge of 8% and a possibility of cancellation by the assigned carrier unless state requirements for safety are maintained.

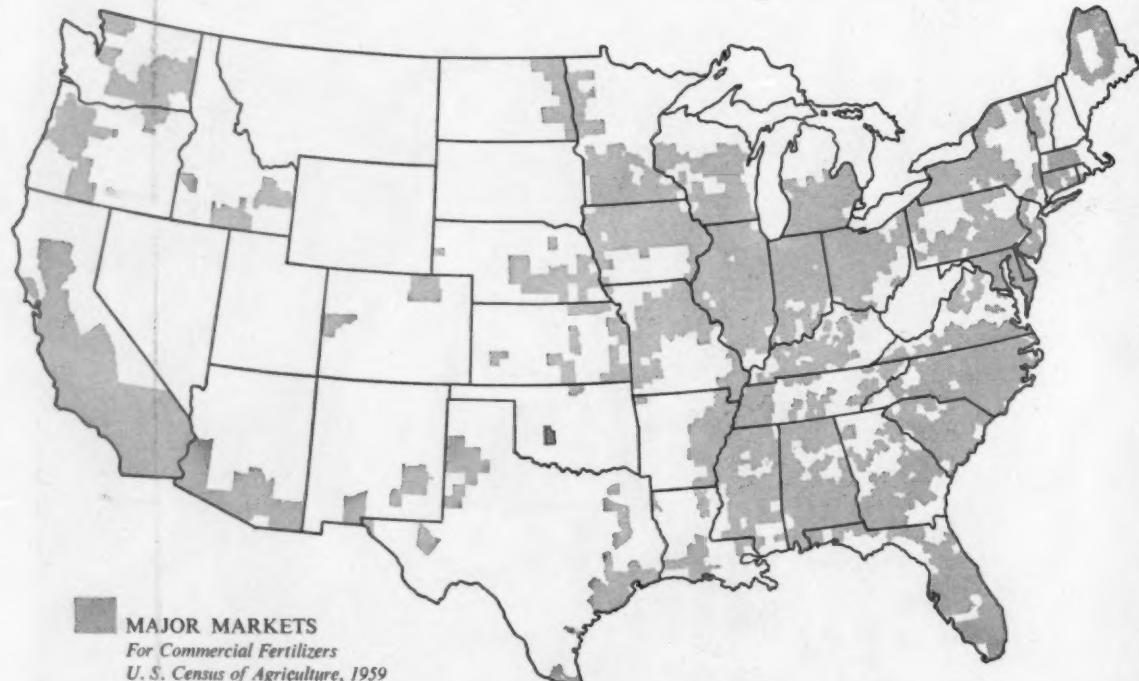
There are many reasons for increased costs of workmen's compensation insurance, including increased compensation and death benefits to workers, increase in doctors and hospital costs, liberal application of workmen's compensation laws, and more injuries.

As industrial injuries increase, the chance for increasing cost arises, and as costs increase, the compensation rates increase.

If injuries are reduced, costs go

Your use of FTE (Fritted Trace Elements) is

# S-P-R-E-A-D-I-N-G



**ONCE A REGIONAL SPECIALTY . . .** FTE is helping produce better crop-yields this year in more than forty states. The big bulk of it is going into general high-productivity fertilizers, used on a wide variety of crops.

Containing all six minor elements—boron, iron, zinc, copper, manganese and molybdenum—FTE provides protection against secondary trace-element deficiencies while remedying specific soil problems. And but little is needed—often no more than 1% mixed into good fertilizers.

Unlike soluble salts that leach out in heavy rains, or become fixed in the soil under certain conditions, FTE releases the nutrients as needed *all through*

*the growing season.* "Fritting" makes possible controlled, predetermined solubility. This, in turn, makes fertilizers more productive, more predictable, irrespective of growing conditions.

Ground almost talcum-fine, FTE mixes easily with other fertilizer ingredients. It will not cake or settle in storage and handling. Being slow-soluble, it presents no toxicity hazards—so can be safely used anywhere, on all crops, simplifying both manufacturing and marketing for fertilizer manufacturers.

There are many reasons why you should thoroughly investigate FTE before going into another selling season. Time is short. You have much to gain. Write for complete information and prices.



**FERRO CORPORATION** Agricultural Division

4150 East 56 Street • Cleveland 5, Ohio

down accordingly. If a plant reduces its cost, it reduces its rates.

There is a direct relationship between injury costs and the number of injuries. This can be seen by a comparison of disability injury frequency rates and compensation insurance rates, as, for instance the 1960 North Carolina rates:

| Industry                        | Compensation rate | Frequency rate |
|---------------------------------|-------------------|----------------|
| Cigarette mfg. ....             | \$0.19            | 4.1            |
| Cloth spinning or weaving ..... | .66               | 6.3            |
| Wood furniture .....            | 1.09              | 13.6           |
| Fertilizer .....                | 1.71              | 15.4           |
| Sawing (lumber) ....            | 3.42              | 24.3           |

Rising frequency rates are usually the first indication of trouble which inevitably results in increased rates for workmen's compensation insurance. Thus, a close watch of frequency rates and corrective safety action can reflect directly in preventing a rise in compensation rates either for an individual plant and for the industry as a whole.

One graphic manner of illustrating the actual costs of accidents is to remember that every dollar lost by accidents or other cause, requires a sale of \$20 to make it up. Therefore, \$50 saved by accident prevention efforts, is worth \$1,000 in new business.

According to the Accident Prevention Department Assn. of Casualty and Surety Companies, a 10% reduction in the frequency of accidents is worth \$1,250 for each 100 employees. Thus, a plant with a hundred employees could save \$6,250 by reducing its frequency rate from 15.0 to 7.5, according to this formula.

Projecting this speculation, the \$6,250 savings would be worth a cool \$125,000 in new business!

tive on the farmers' part is, and has always been, the key to a healthy agriculture. I am convinced we have gone about as far as is possible with government help. More will ruin us as a nation and as a people.

I subscribe to the thought that "if we ask, request or permit anyone to do for us the things we are morally obligated to do for ourselves, we have by just that amount reduced our Liberty and Freedom."

**Archie T. Edwards**, Manager,  
Southern Farm Supply Co.,  
Sulphur Springs, Texas.

#### ELM DISEASE CURE?

A "cure" for Dutch Elm disease is claimed by Willard Kremer, city forester of Beloit, Wis. He says some 100 trees were sprayed since July and all revived. His preparation will not be recommended by the University of Wisconsin until further tests have been made, university officials said.

## Program Set for November Northwest Plant Food Meet

Talks by experts in the field of soil nutrition will round out a program designed to attack problems confronting the mixer and retail distributor in the northwest area, during the annual fall convention of the Pacific Northwest Plant Food Assn., slated for Nov. 2-3 at Gearhart, Ore.

Emphasis on the program will be to get away from "glittering generalities and platitudinous phrases," according to Harold Rud, Salem, Ore., association president. He advises that every effort will be made to "get at the bone of distributor problems and questions."

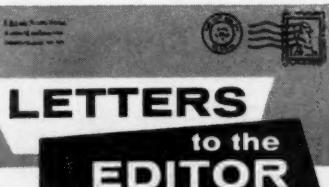
A special feature of the program will be a panel discussion on the subject, "Can co-operatives and independents compete successfully in the same marketing area?" Supporting

the co-operative side of the question will be Foye Trout, secretary and general manager, Pacific Cooperatives, Walla Walla, Wash., and A. J. Oldenburg, manager, fertilizer department, Western Farmers Assn., Seattle, Wash. Swede Cummings, Huntington and Cummings, Walla Walla, Wash., and Dick South, Hanson and Peterson, Mount Vernon, Wash., will present the independent view.

The convention business program will occupy one day. Speakers will include Bill Brissenden, J. R. Simplot Co., Pocatello, Idaho; Frank Meeker, Meeker Fertilizer Co., Salem, Ore.; Bob Inkpen, Cominco, Spokane, Wash.; Bill Jaqua, sales department, Ortho division, California Chemical Co., Richmond, Cal.; Jim Davis, Cline Advertising Agency, Boise, Idaho, and Dick Blame, regional director, National Plant Food Institute, San Francisco, Cal.



# DECISION MAKERS' 445-page blueprint for successful FERTILIZER OPERATIONS



#### To the Editor:

With reference to the story (in September Croplife) about the gulls gobbling grasshoppers on the Glaser farm at Medina, Ohio, until "there wasn't a grasshopper in sight" last year, I would like to say that there must have been at least two, or Farmer Glaser would not have had them again this year.

**Harry Foehner**, Editor,  
Texas Farming and Citriculture,  
Harlingen, Texas.

#### To the Editor:

We are contemplating attending the Round Table again. It is helpful and educational. . . . I would like to see a "Little" Round Table at Shreveport of one and one half days' duration. Then the smaller mixers could attend and send their production men. We would like such an arrangement and I believe it would be attended in force.

We were well pleased with tonnage and farmer attitudes (this past season), but of course, we tried our very best to eliminate ourselves by confounding our pricing structure.

Regarding government programs, it has been my observation this past 15 years or so that regardless of what the government conjured up for the farmer, that "Mother Nature" decided more what the farmer does. In other words, regardless of the program, if the season is adverse from a planting or preparation standpoint, then farming is affected.

The government will never be able to change that to any degree, and I firmly believe we have too much government intervention as it is. Farmers make their living farming and a free, independent, individual initia-

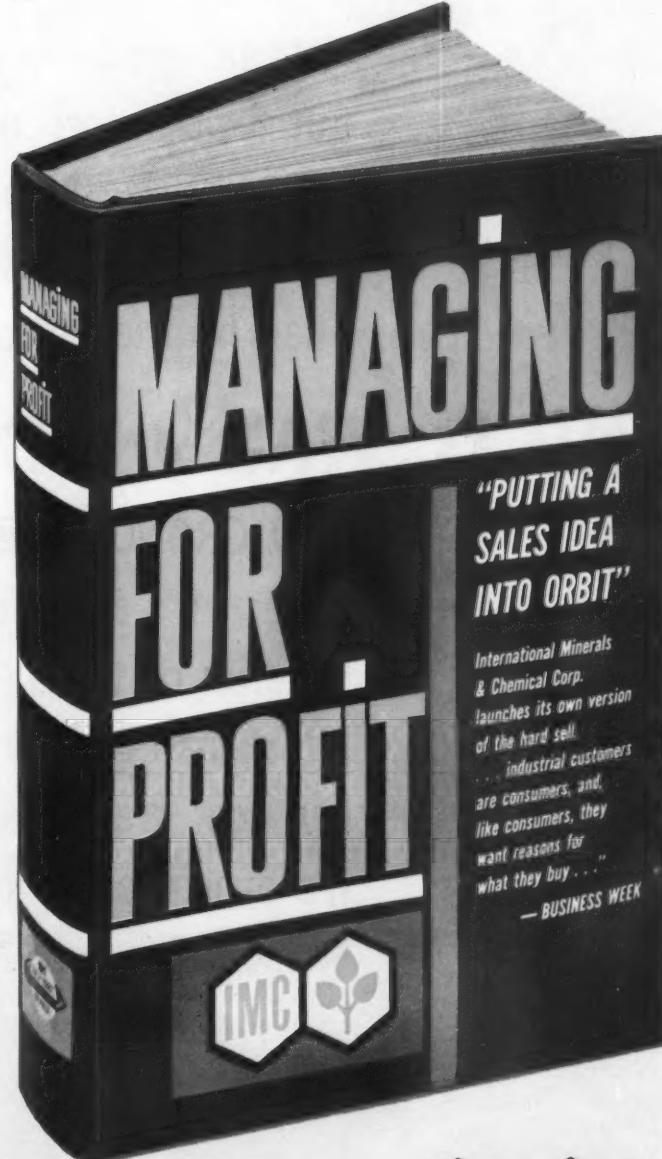
IMC's new bound volume, *Managing for Profit*, promises to become the basic standard reference

for the industry. This authoritative manual penetrates every aspect of decision making in the fertilizer business. This book will be distributed to customers during the month of October by IMC representatives.

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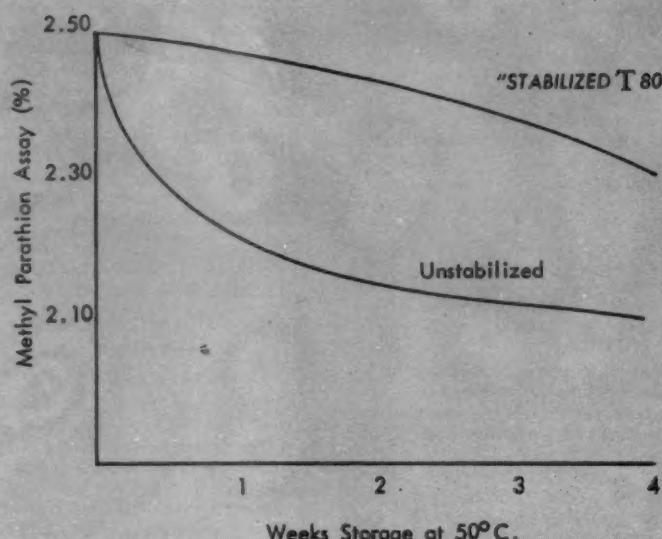
# Formation Problems Of Methyl Parathion

By Pat Macaluso and Joseph Murray  
Stauffer Chemical Co.

METHYL Parathion, a cotton insecticide and acaricide, is generally formulated into dilute dusts and emulsifiable concentrates. Formulation of this insecticide into useful, stable products is readily accomplished provided certain precautions are taken. Failure to observe these can turn an otherwise routine, successful operation into a difficult and dangerous one.

Among the factors requiring special attention in Methyl Parathion are its very high toxicity to warm-blooded animals and its moderate stability as organic phosphate insecticides go.

Other problems are crystallizing tendency of the technical solution, instability upon heating and the gel-forming tendency of some emulsifiables. Experience has provided work-



**DEGRADATION CURVE**—Typical degradation curve under accelerated laboratory test storage for 2.5% Methyl Parathion dust using 80% stabilized technical on Fuller's earth type carriers with a talc diluent.

able solutions to these problems and many of them are discussed in this article.

#### Technical Material

Technical Methyl Parathion is a white, crystalline, tacky solid which melts at 36° C. In this form it is difficult to handle. Therefore xylene solutions, containing 80% Methyl Parathion, are sold to formulators. These xylene solutions are liquid at room temperatures and remain so to about 65° F.

Typical properties of Methyl Parathion 80% solution are as follows:

|  |                     |
|--|---------------------|
| Analysis:                              |                     |
| Minimum assay .....                    | 80%                 |
| Xylene .....                           | 17-15.5%            |
| Inert ingredients .....                | 3-4.5%              |
| Specific gravity at 20/20° C .....     | 1.21-1.25           |
| Wt. per gallon at 68° F. (20° C) ..... | 10.0-10.3 lb.       |
| Color .....                            | Amber to dark brown |
| Odor .....                             | Pungent             |
| Flash point, TOC .....                 | 115° F.-122° F.     |
| Toxicity to mammals, LD-50 .....       | 12-30 mg./kg.       |

Assay is specifically for Methyl Parathion which is O,O-dimethyl O-(p-nitrophenyl) thiophosphate and is best carried out by the IR Spectroscopic method obtainable from suppliers. UV and Colorimetric methods may also be used with technicals of known composition. Certain impurities can throw these methods off, however, so that the IR method should be used as a reference method if there is any doubt as to the source and character of the technical Methyl Parathion.

#### Safe Handling Procedures

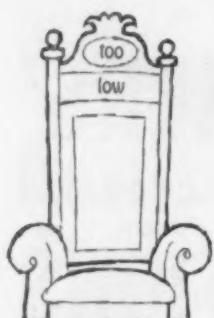
Methyl Parathion is highly toxic to humans. It may be handled safely only if the most stringent precautions are maintained. Personnel manufacturing Methyl Parathion formulations must be protected from exposure to dusts and vapor as Methyl Parathion is readily absorbed into the body by inhalation, swallowing, or contact with the skin.

Methyl Parathion is a strong cholinesterase inhibitor and repeated inhalations or skin contact will increase susceptibility to poisoning without giving rise to symptoms.

When manufacturing Methyl Parathion dusts or liquid, personnel must always:

1. Wear coveralls, a hat, rubber boots, and natural rubber gloves. Change clothes daily.
2. Wear a USDA approved respirator. Change filter every four hours and cartridges after eight hours of use. Wash mask with soap and water daily.
3. Wash face and hands immediately after leaving work area and before eating or smoking.

In all cases of suspected Methyl Parathion poisoning, call a physician. Full details on safe handling and safe



**G**one there was a formulator.  
He formulated granular pesticides.  
First he tried low-absorbent granulars.  
But their absorbency was too low.  
Next he tried high-absorbent granulars.  
But their cost was too high.  
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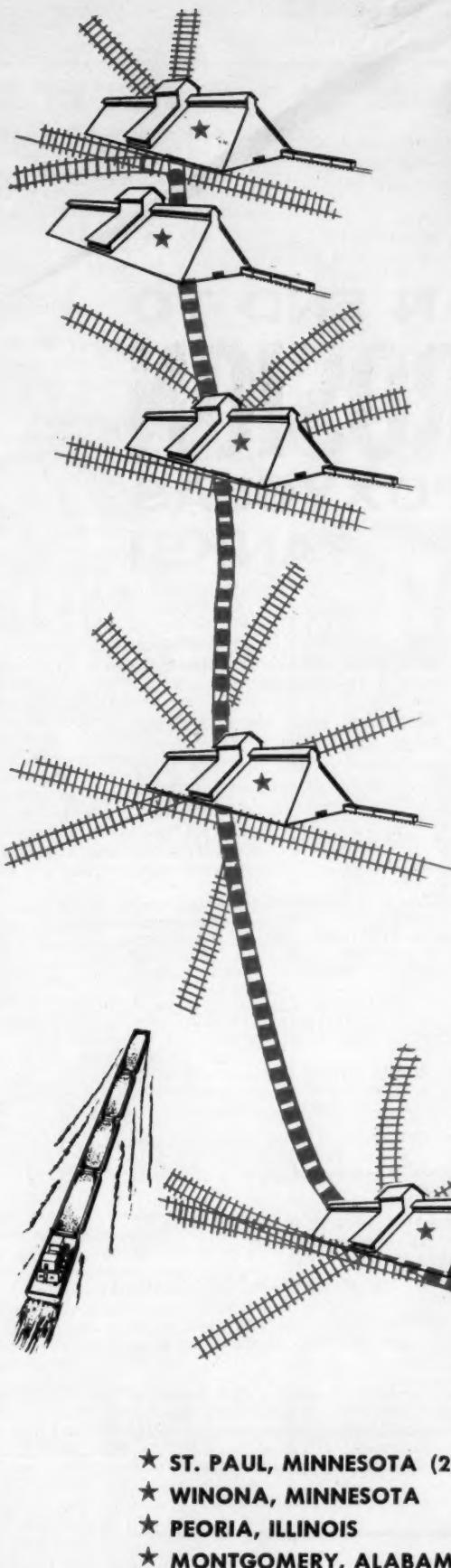
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Turn to FORMULATIONS page 17



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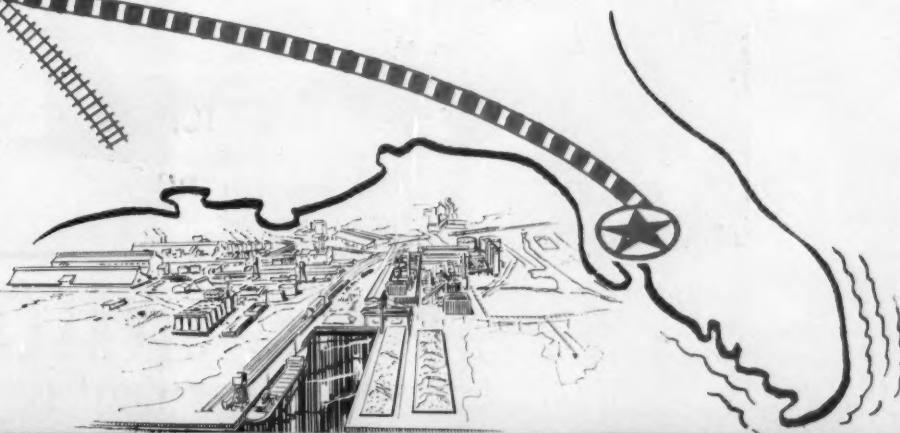
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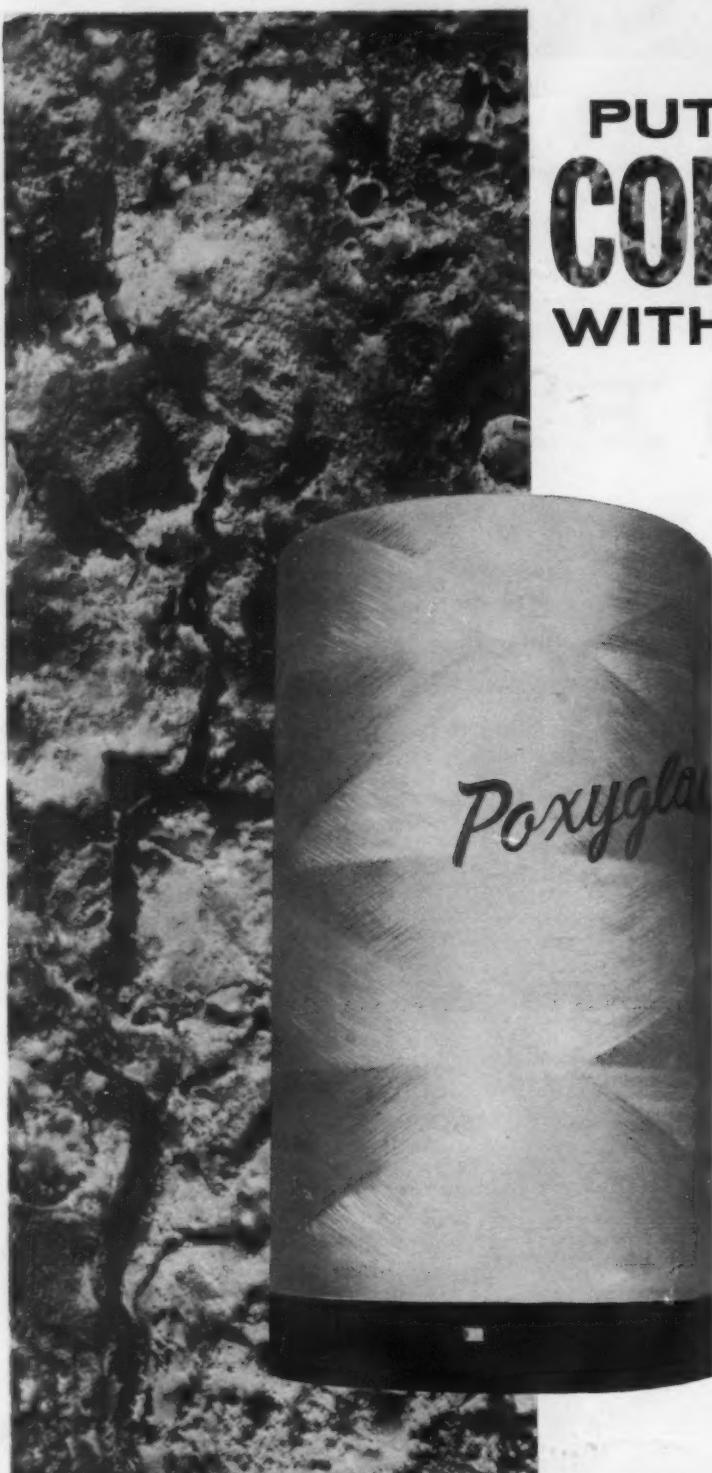
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What do you look for in solution storage or handling tanks? Resistance to corrosion is important.

But there are other characteristics you need: low initial cost, strength, low maintenance. And the tank must be able to hold all common fertilizer solutions and agricultural chemicals.

Check these desirable characteristics: see why POXYGLAS is your answer!

**RESISTANCE TO CORROSION:** Epoxy resin and glass are the best known deterrents to corrosion. POXYGLAS tanks are a combination of glass and epoxy resin, inside and out! With its resin-rich interior surface, POXYGLAS is ideal for holding all low and non-pressure fertilizer solutions: phosphoric acid, aqua ammonia, urea and nitrogen solutions, all complete mixes.

**LOW INITIAL COST:** Compared to other tanks with the same corrosion resistance, POXYGLAS tanks cost far less.

**STRENGTH:** Because of the unique filament winding process, POXYGLAS has more than twice the strength-to-weight ratio of highest quality steel.

**LOW MAINTENANCE:** POXYGLAS tanks require no maintenance other than normal cleaning.

Complete range of sizes from 300 to 16,000 gallons.

For more information on POXYGLAS tanks write BS&B, Industrial Air Park, Ardmore, Oklahoma.

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## FORMULATIONS

Continued from page 14

manufacturing arrangements are available from suppliers.

### Handling Crystallized Technical

Methyl Parathion 80% technical remains liquid unless cooled to temperatures below 65° F. Such crystallization is a common occurrence in transportation and storage, where temperatures are not maintained at or above this crystallizing temperature.

When Methyl Parathion 80% technical "freezes," crystals of nearly pure 100% Methyl Parathion form and settle out on the bottom of the drum. These crystals melt at a temperature of 97° F. Crystals of pure Methyl Parathion form because the xylene - Methyl Parathion mixture cannot hold the Methyl Parathion in solution below the 65° F. level. The extent of the crystal formation will depend on the temperature and the length of exposure time and once the crystals have formed in the drums, they will remain undissolved even though the temperature is raised to the 65° F. level or slightly higher.

A simple way to determine whether crystallization has taken place in a metal drum is to rap on the lower 1/3 of the drum with a coin or small metal object. If the material has begun to crystallize, the rap will produce a dull, solid sound, and the extent of the crystallization may be approximated by tapping the drum (with a coin), beginning at the bottom and proceeding upward. At the point where a clear metallic ring is produced, you have located the interface of the solid crystals and the solution.

The potentially hazardous characteristics of Methyl Parathion must be strongly emphasized in any handling procedure. In addition to its high order of toxicity, Methyl Parathion is thermally unstable at elevated temperatures. While temperatures up to 125° F. are considered safe, caution must be exercised not to heat the material to higher temperatures since degradation of the product may occur. At higher temperatures this degradation occurs with the evolution of heat and at the accelerated rate can reach explosive proportions at 250° F.

Live steam or other direct heat sources having temperatures higher than 120° F. or any uncontrolled source of heat should not be used. The following suggestions are offered as reasonably simple and inexpensive methods of thawing and producing a uniform 80% technical strength.

The primary requirements to return crystallized Methyl Parathion to solution are the elevation of the temperature, along with agitation. However, the material does not dissolve at a reasonable rate until the temperature of the contents of the drum is actually raised to approximately 97° F. In an unconfined warehouse or formulating area heating may be accomplished by positioning or stacking the drums to be thawed directly in front and below a thermostatically controlled steam heated or gas-fired forced-air space heater.

The distance between the drums and the space heater, the position of the thermostat, the space heater capacity and the warehouse temperature all combine to determine the thawing rate of the drums. This method with so many variables must be worked out experimentally. Again, the authors stress the importance of establishing proper handling techniques to insure against overheating.

With a maintained temperature above 90° F. the drums could be carefully rolled on a smooth floor surface or preferably a drum track, wherein there would be periodic 1/2 to 1/4 revolution per drum every few hours. This rolling causes the crystals and the liquor to be mildly

agitated and the redissolving or thawing could be accomplished in a few days' time. If agitating equipment is available, such as a drum rocker or drum roller, redissolving can be accomplished in an hour or two.

If a storage area is not available for maintenance of a constant temperature, thermostatically in the range of 97° F., an inexpensive installation of an improvised small enclosure or cubicle can be employed. Heat can be provided by a steam or electric heater equipped with a fan and thermostatically controlled. These drums can then be used promptly or returned to a warehouse area, where the minimum of 65° F. is maintained.

With any of these procedures it is a good practice to follow the effects of the heating cycle by feeling the outside of the drum receiving the maximum exposure to the blast of hot air. Safety will not be compromised if maximum skin temperatures do not exceed 110° to 120° F. This means warm, but not hot, to the touch.

### Emulsifiable Concentrates

Methyl Parathion is generally formulated alone or in combination with DDT, Endrin, Toxaphene or Stropane. On occasion "shot gun" mixtures such as DDT-Methyl Parathion-Toxaphene 3-1-4 emulsifiable concentrate are prepared.

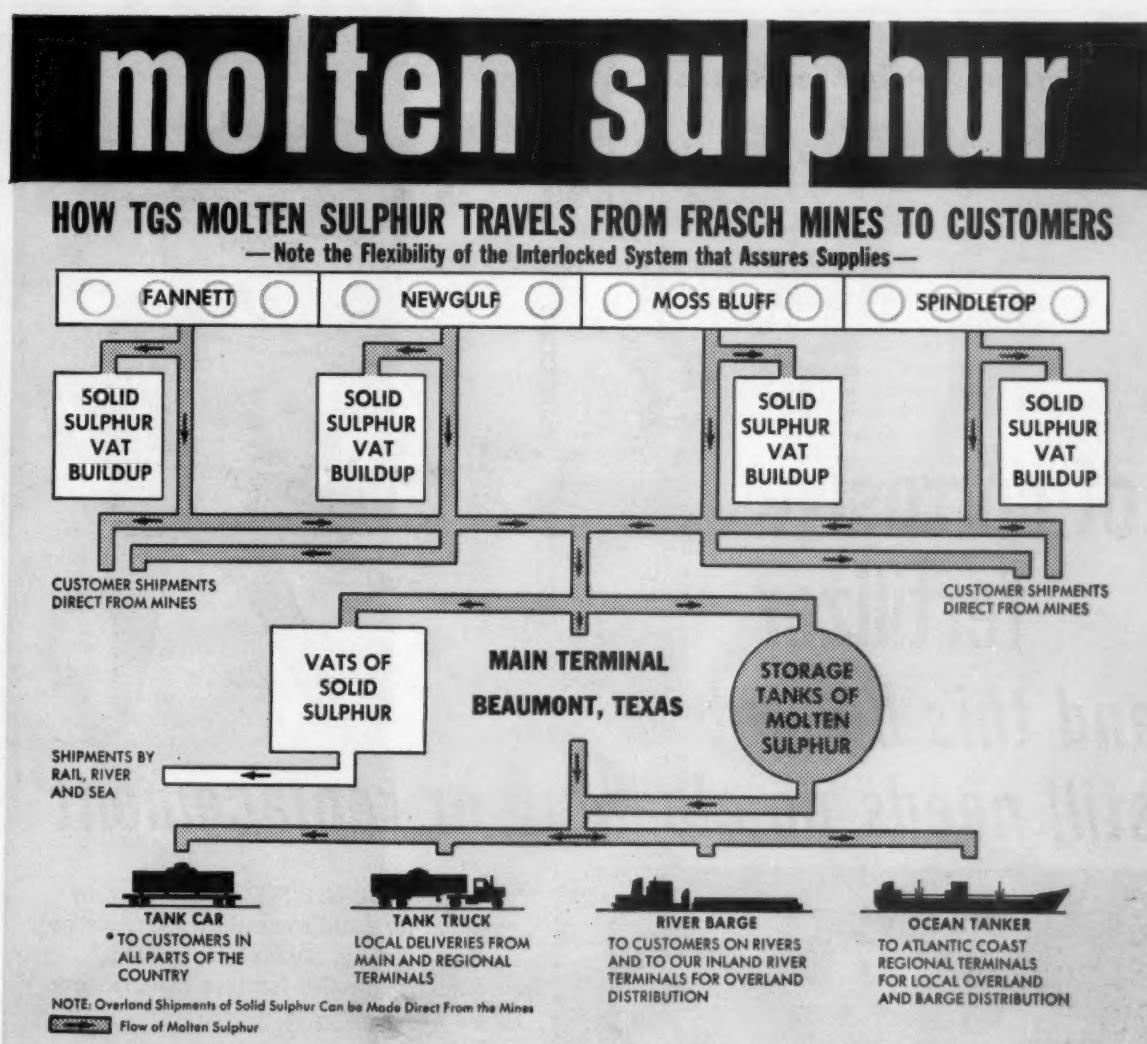
Highest quality products are formulated using xylene or a xylene range aromatic solvent. Products formulated using heavy aromatic naphthalenes or mixtures of xylene and kerosene may be phytotoxic to sensitive crops.

DDT-Methyl Parathion combina-

tions which contain more than 2.5 lb. of DDT show poor low temperature stability. The toxicants will crystallize out of solution at 50° F. and will not readily redissolve if the product is rewarmed at 115° F.

The solvency of xylene is not great enough to hold the toxicants in solution at low temperature. To improve the low temperature stability of these combinations part of the xylene must be replaced with a better solvent. Normally ketones such as cyclohexanone, isophorone, methyl isobutyl ketone or mesityl oxide are used. Approximately 15% of one of these ketones must be added to the formulation if a product having a minimum low temperature stability of 32° F. is desired or 30% if 10° F. is desired.

All of the leading suppliers of emulsifiers to the agricultural trade have products which will emulsify Methyl Parathion properly. The best of these emulsifiers are anionic-non ionic blends in



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The rapidly growing demand for deliveries of sulphur in molten form—and it is coming from all parts of the country—is well answered by the flexibility of our production, storage and distribution facilities.

Here, graphically, is the way TGS Molten Sulphur moves from the four Frasch Process producing areas in Texas to customers. Unusual flexibility enables us to do several things simultaneously. We can fill orders direct from the mines, build up inventory at our main terminal in Beaumont, Texas, ship to customers from this main terminal

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which the anionic material is calcium dodecyl benzene sulfonate and the non-ionic used are ether linked. Since Methyl Parathion hydrolyzes readily in the presence of moisture, these emulsifiers should contain no more than 0.5% moisture.

Some formulators find that their products develop gel after several months storage. This can be caused either by using technical Methyl Parathion which has been kept in unlined drums, or by packaging the finished emulsifiable concentrates in unlined containers.

For best results, Methyl Parathion should be bought and packaged in lined containers. Clear or pigmented high-baked phenolic linings are generally used for this purpose.

Stabilized technical Methyl Parathion is currently being offered at 70% active and at 80% active for use in dry formulations. These stabilized technicals are not recommended.

ed for use in emulsifiable concentrates by the suppliers. Hence, non-stabilized 80% technicals only should be used in manufacture of emulsifiable concentrates.

#### Dust Formulations

It is widely recognized that Methyl Parathion dusts may be subject to considerable loss of activity under commonly-encountered conditions of manufacture and storage. Although the bulk of the Methyl Parathion dusts formulated in a given year are used promptly with excellent results, the possibility of excessive deterioration in late season or in carryover is always present.

Fortunately, this problem can be managed practically by the adoption of certain measures. The formulator has a choice of those which will best suit his particular circumstances.

Methyl Parathion is subject to breakdown by heat and moisture as discussed above. Distribution of the toxicant over the surface of carriers

and diluents in the formulation of dry concentrates and dusts increases this sensitivity to heat and moisture. In addition, the carriers used to provide absorbency in dry formulations catalyze the breakdown of Methyl Parathion due to specific "acid centers" on their surface.

Using the best formulation practices with unstabilized technical, losses of about 15% of the Methyl Parathion content can reasonably be expected within the course of a season and even more if carried over to the next year. While better results than this are sometimes experienced, the extent of variation in manufacturing, raw material and storage conditions is such that the losses could be considerably greater than the above.

Potent, usable dry formulations of Methyl Parathion can be turned out by adoption of a combination of the following practices:

1. Choose the right carrier. The Fuller's earth type of absorbent

carriers so widely used to prepare insecticide concentrates are also the best choices for Methyl Parathion. These are the high absorbency attapulgites and montmorillonites (non-bentonite type). Even though they are catalytically active, they offer the best combination of physical properties and economy. They are necessary for manufacture of 25% concentrates. For 15% concentrates it may be possible to use the less active but less absorbent kaolinates of the Georgia type, although supplementary use of Fuller's earth type carriers may be needed to assure adequate absorbency. It is an open question as to which moisture level is best in the high absorbency carriers. Excess moisture will promote hydrolysis, but overly dried or calcined grades are more catalytically active when fresh. It is probably best to avoid extremes here.

2. Choose the right diluent. The well-established grades of agricultural talcs and pyrophyllites are undoubtedly the best choices for the letting down of dilute dusts from dry concentrates. Two important characteristics of diluents, aside from particle size, bulk density, dustiness, flowability, color and cost, are low catalytic activity and low absorbency. In the formulation of dusts from liquid toxicants, excess absorbency in a diluent may tie up the toxicant thus reducing its effectiveness. Several other types of inert low absorbency diluents may also be used but these should be tested or the suppliers of the diluent and toxicant checked for test data. Large amounts of medium absorbency diluents should be avoided in Methyl Parathion dust formulation.

3. Deactivate carriers and diluents. A convenient, economical means of overcoming breakdown caused by carriers is to use a stabilized technical Methyl Parathion now available in 70% (Monsanto) and 80% (Victor) active strength grades. Limited data, based mostly on laboratory storage at 50° C., suggests that less than 10% loss in Methyl Parathion by degeneration will occur in one month at 50° C. in both dusts and dry concentrates using stabilized technical. Losses using unstabilized technical will typically run at least twice as high. It is evident that under the wide range of conditions encountered in both manufacture and storage, similar breakdown might occur in actual cases within three to four months at best while under more favorable conditions the product might hold up equally well for a year or more.

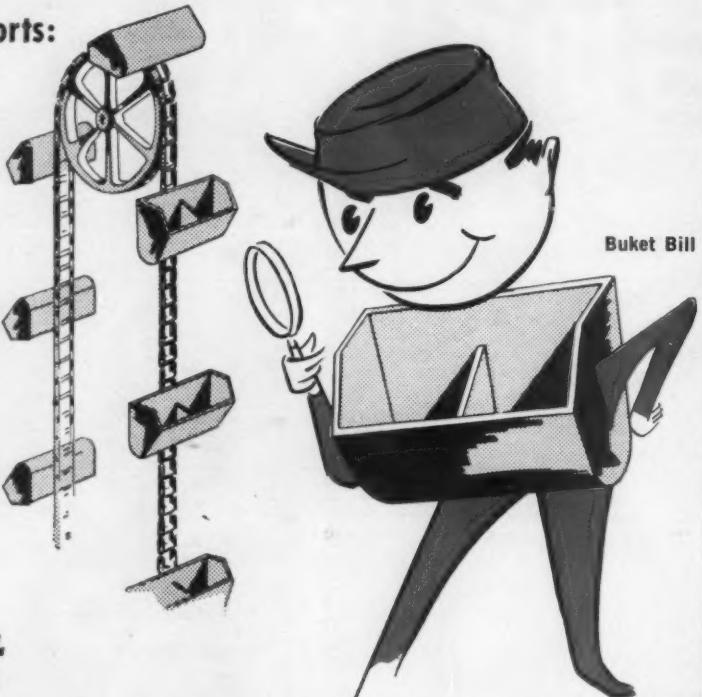
Direct deactivation of carriers can be carried out as an alternative or a supplement to the above. This can achieve somewhat greater protection but at greater cost. Non-alkaline deactivators such as the glycols and glycol-ethers are often employed at levels up to 7% on the weight of high absorbency carrier used. Up to 1% deactivator on the weight of diluent is also employed to deactivate some talcs and pyrophyllites. Where other toxicants such as DDT or Endrin are added in the form of dry concentrates, deactivation of their carriers is also advisable. In this connection alkaline stabilizers often used with Endrin concentrates may be detrimental to Methyl Parathion. Less alkaline or non-alkaline stabilizers are best used here.

4. Control inventories. Scheduling and market practices which will speed freshly manufactured Methyl Parathion to the grower and

Turn to FORMULATIONS page 29

#### The Farmers Fertilizer Co. Reports:

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after  
ton  
of corrosive  
fertilizer  
and this bucket  
still needs no cleaning or replacement"**



"Our plastic DURA-BUKETS have been in operation for quite some time and show no signs of cracking, abrasion or build-up," says this progressive fertilizer manufacturer. Here's why:

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## The importance of follow-through in NH<sub>3</sub> and Nitrogen Solutions purchases

by Ray Funk

### About the Author.

Follow-through is Ray Funk's specialty. He has been doing such work for 14 of the 23 years he has been engaged in sales work. For the last six years, Ray, as Product Distribution Coordinator, has devoted his time exclusively to customer service work on nitrogen products.

\* \* \*

Follow-through on a sale is for the seller *not* the buyer. The ideal in this follow-through is to obviate the need for the buyer to do anything further after placing the order except to be ready to receive the shipment when it arrives. As a seller, we often

go beyond the delivery responsibility by helping a customer in such matters as designing facilities for storage and handling. We may also assist him with educational programs on the safe handling of the Ammonia and Nitrogen Solutions.

But there is much more than this to sales follow-through on NH<sub>3</sub> and Nitrogen Solutions Sales. When we receive an order for Anhydrous Ammonia or Nitrogen Solutions, we must be ready to tell the customer at any time exactly where his shipment stands and when he should be receiving it. We must know what tank cars are available, when they will be loaded and when they

will leave our siding. We must also know when the railroad who receives the car will be making it into a train. And of course, we must know the routing that will most expeditiously

deliver the shipment to the customer.

This same attention to follow-through is true of truck shipments. We schedule accurately the arrival, loading and departure of truck transports from the plant; the surest route and the time of delivery. During peak Spring and Summer this is critical. To us it is important that the needs of our customers are attended to without interruption regardless of the method of delivery or seasonal peaks.

\* \* \*

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## NAC CONVENTION

Continued from page 1

side at the opening session, Monday, Oct. 30. P. J. Reno, Hercules Powder Co., Wilmington, Del., program chairman, will call the meeting to order, with Dr. Ferguson addressing the group as first speaker of the convention.

A report of the NAC dues committee will be presented, with Ed H. Phillips, Cooperative GLF Exchange, New York, chairman of the committee, as chairman. Reports will be made by Herbert F. Tomasek, president, Chemagro Corp., Kansas City, Mo., and Warren H. Moyer, president, Chipman Chemical Co., Inc., Bound Brook, N.J.

Dr. J. O. Rowell, extension entomologist of Virginia Polytechnic Institute is on the Monday morning agenda for an address, "The Extension Entomologist, A Public Relations

Agent," followed by a talk by Miss Willie Mae Rogers, of the Good Housekeeping Institute, New York. Her topic: "Chemicals and Food—The Woman's Angle."

A paper by Dr. D. A. Spencer, of the U.S. Fish and Wildlife Service, will complete the agenda for Monday morning's session. His subject has been announced as "Chemicals and Wildlife Management."

Luncheon speaker will be Dr. G. Herbert True, South Bend, Ind.

The afternoon of Monday, Oct. 30, will be devoted to NAC committee meetings, with an association-sponsored reception for members and guests at 6 p.m.

A golf tournament is scheduled for Tuesday morning, under the chairmanship of George W. Oliver, Ortho

Division, California Chemical Co., Washington, D.C.

Miss Cathy Bauby will be luncheon speaker on Tuesday. Invited to her program are both men and women conventioneers, NAC says.

The annual NAC Banquet is scheduled to be held Tuesday evening, Oct. 31, with Hon. Abraham Ribicoff as speaker. Formal dress has been suggested for this event.

The final day's program will be devoted to a NAC staff report for members only, and the introduction of new officers and directors of the association elected at the meeting.

Program committee for the 1961 meeting, in addition to P. J. Reno, chairman, includes M. C. Van Horn, Florida Agricultural Supply Co., Jacksonville, Fla.; Dr. Richard H. Wellman, Union Carbide Chemicals Co., New York; Daniel J. Keating, Stauffer Chemical Co., New York, and Denis Hayley, director of information, NAC Assn., Washington, D.C.

## Sulphur Production Up 6% in 1960, U.S. Tabulation Indicates

United States production of sulfur in all forms in 1960, as reported by producers to the Bureau of Mines, totaled 6.6 million long tons, about 6% more than that produced during 1959, the Bureau reports.

Of the total U.S. production, 4.9 million tons was Frasch-process sulfur from mines along the Gulf Coast; 0.8 million tons was recovered elemental sulfur; 0.4 million tons was sulfur contained in pyrites; 0.3 million tons was sulfur from smelter gas; 0.2 million tons was sulfur recovered from other sources.

Consumption of sulfur in all forms in the U.S. totaled about 5.9 million long tons, slightly less than that consumed during 1959. Approximately 80% was used in the manufacture of sulfuric acid, the remainder was used principally by the wood-pulp and carbon bisulfide industries.

Imports of sulfur to the U.S. reached a new high of 739,000 long tons, 15% greater than the 642,000 tons imported in 1959. Of the total quantity imported, 603,000 tons was native sulfur from Mexico and 136,000 tons was recovered sulfur from Canada. Pyrites imported from Canada contained approximately 146,000 tons of sulfur.

Exports of sulfur during 1960 increased 9%—151,000 tons over 1959—in spite of the growing competition from new foreign sulfur producers. New producers and the tonnage each shipped in areas formerly serviced by U.S. concerns were: Pan American Sulfur Co., Mexico, 437,000 tons; Gulf Sulfur Corp., Mexico, 145,000 tons; and Société Nationale des Pétroles d'Aquitaine, France, 686,000 tons. The increase in exports was attributed to the high level of business activity in many non-Communist countries and the trend toward the use of elemental sulfur rather than sulfur in other forms. The principal countries of export were the U.K., Canada, Australia, India and Brazil.

Producers' stocks of Frasch sulfur on hand Dec. 31, 1960, totaled 3,668,332 long tons, 4% below the 3,809,708 tons on hand Dec. 31, 1959. Of this, 3,316,298 tons was held at the mines and 352,034 tons elsewhere.

### U.S. CHAMBER OF COMMERCE HITS TVA

That the Tennessee Valley Authority should cease to engage in the fertilizer business is being requested of Congress by the U.S. Chamber of Commerce. The recommendation by USCC is that TVA's research work on new plant foods be transferred to the U.S. Department of Agriculture, and that the agency be denied funds for its manufacture of fertilizers.

The Chamber says TVA plans to sell, during the coming year, fertilizers valued at \$25 million for about \$20 million. This, the Chamber insists, results in a subsidy to the farmers receiving and using the fertilizer. The Chamber has told Congress that the TVA program is a commercial activity in competition with private enterprise. "The sheer magnitude of the program—fertilizer sales of \$20 million—removes it from the 'research and demonstration' category," the request says.

"Operations planned for fiscal 1962 call for the distribution of 289,000 tons of fertilizers costing \$25 million. This scale of operations is far in excess of the amount required for 'educational purposes,'" the Chamber pointed out.



Because the fruit and vegetable crops were treated with

### TRIANGLE BRAND COPPER SULFATE

Regular or basic copper sulfate should be mixed in insecticide-fungicide sprays and dusts to insure appetizing, attractive fruits and vegetables that consumers "reach for."

When used in fertilizers, Triangle Brand Copper Sulfate helps to enrich the soil, resulting in healthy, profitable crops.

Help your customers produce more profitable crops. Use regular or basic Triangle Brand Copper Sulfate in your fertilizer and insecticide-fungicide formulations...it will mean more money in your pocket!



**phelps  
dodge** refining corporation

300 PARK AVENUE • NEW YORK 22, NEW YORK

# Arcadian® News

Volume 6

Nitrogen Division, Allied Chemical Corporation

Number 10

## ANNOUNCING two new ARCADIAN® Solutions for producing premium-grade fertilizers —

### DURANA® 40

| CHEMICAL COMPOSITION % |                   |                  |      |              |       | PHYSICAL PROPERTIES                             |                            |  |   |
|------------------------|-------------------|------------------|------|--------------|-------|---|----------------------------|--|---|
| Total Nitrogen         | Anhydrous Ammonia | Ammonium Nitrate | Urea | Formaldehyde | Water | Neutralizing Ammonia Per Unit of Total N (lbs.) | Approx. Sp. Grav. at 60° F | Approx. Vap. Pres. at 104° F per Sq. In. Gauge | Approx. Temp. at Which Salt Begins to Crystallize ° F |
| 37.0                   | 14.6              | 29.0             | 32.0 | 16.0         | 8.4   | 7.87  | 1.198                      | 0  | 36  |

### U-A-S® F

|      |      |   |      |      |      |      |       |    |    |
|------|------|---|------|------|------|------|-------|----|----|
| 40.0 | 26.0 | 0 | 40.0 | 16.0 | 18.0 | 13.0 | 1.051 | 24 | 55 |
|------|------|---|------|------|------|------|-------|----|----|

**DURANA 40** and **U-A-S F** are new and different ARCADIAN Nitrogen Solutions created for fertilizer manufacturers who wish to produce premium-grade complete fertilizers containing slowly-available, water-insoluble organic nitrogen. Through the proper use of these solutions in manufacturing complete fertilizers —

— approximately 40% of the total nitrogen from DURANA 40 is converted into water-insoluble methylene urea (ureaform) nitrogen.

— approximately 37% of the total nitrogen from U-A-S F is converted into water-insoluble methylene urea (ureaform) nitrogen.

This conversion to organic nitrogen takes place in the

process of producing the fertilizer. In addition to organic nitrogen (methylene urea), complete fertilizers made with DURANA 40 also contain nitrate and ammonia nitrogen, and complete fertilizers made with U-A-S F also contain ammonia and urea nitrogen.

The agronomic value of these forms of nitrogen in complete fertilizers is well established. DURANA 40 and U-A-S F are particularly adapted to the production of premium grades, such as lawn and garden fertilizers and specialty fertilizers for crops such as tobacco, etc. Both of these solutions have been successfully tested.

In addition to supplying desirable forms of nitrogen, DURANA 40 and U-A-S F help give fertilizers excellent

(continued on following page)

## Arcadian News for Fertilizer Manufacturers from Nitrogen Division, Allied Chemical

(continued from preceding page)

mechanical condition and facilitate the production of granular-type fertilizers. Each solution is ideally suited to the production of high-analysis fertilizers in ratios of 1-1-1, 2-1-1, 3-1-1 and higher nitrogen ratios.

You do not need to buy new equipment to use DURANA 40 or U-A-S F Nitrogen Solution. These new solutions are as easy to use through your existing equipment as your regular ammoniating solutions.

It will pay you to start now to produce premium-grade fertilizers containing slow-release (methylene urea)

nitrogen, by using DURANA 40 or U-A-S F. These two new solutions are produced and sold exclusively by Nitrogen Division, Allied Chemical Corporation. They are products of Allied Chemical research—the same research that originated nitrogen solutions for ammoniating superphosphate more than 30 years ago. Through the years, this continuing research has brought you many new methods and materials for making better fertilizers. For information about DURANA 40 and U-A-S F and other ARCADIAN Nitrogen Products, contact Nitrogen Division, Allied Chemical Corporation.

erosion and abrasion of the pipe. Corrosion and abrasion are cumulative and may pass unnoticed in their early stages unless a careful checking procedure is diligently maintained.

Improper use of acids and ammoniating media often causes the formation of many large particles too early in the ammoniation stage. This seriously limits further ammonia take-up by the superphosphate. Some of the unreacted acid may be buried inside these particles. Addition of more acid aggravates the situation and is a costly way of handling the problem. In extreme cases, it may also be dangerous.

### Important Checkpoints

When your analyses indicate a loss of nitrogen in the ammoniation process, your first checkpoints should be: 1) Is your manpower efficient? 2) Are you using the proper distribution pipes and are these maintained in the best possible operating condition? 3) Are your formulation techniques correct for the fertilizers you wish to produce? 4) Are you using the ammoniating solution best suited to your methods and equipment?

Occasionally, loss of nitrogen occurs in the dryer. This may be due to excessive firing of the furnace as a result of poor installation or poor maintenance of the dryer. It may also be caused by forcing equipment beyond its capacity during periods of peak output.

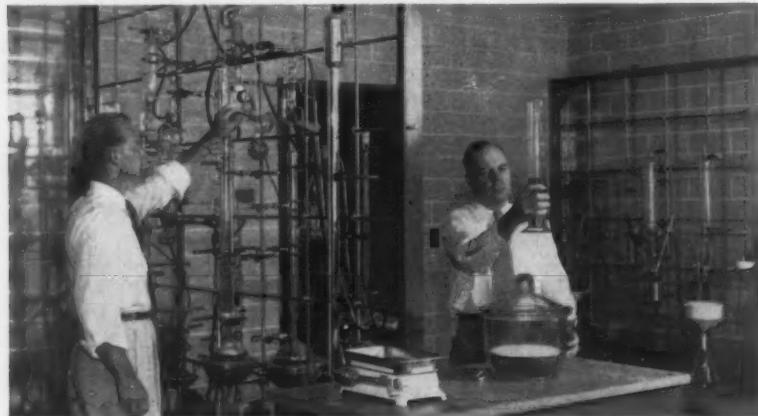
In storage, there is seldom any appreciable loss of nitrogen from conventional formulae. When this does happen, a thorough appraisal of every phase of production should be made immediately.

### Ask Nitrogen Division

When you have a formulation or an ammoniation problem, it will pay you to get the advice of a Nitrogen Division, Allied Chemical, technical service man. These men have a thorough knowledge of the entire operation of a fertilizer plant. They often assist in the selection of equipment and in the suggestion of more efficient, money-saving methods all along the production line.

This service is available to Nitrogen Division customers without charge. Get the facts from your Nitrogen Division salesman...or contact Nitrogen Division, Allied Chemical Corporation, 40 Rector Street, New York 6, N. Y. Phone: HAnover 2-7300.

NOTE: The information furnished in this issue of the ARCADIAN News is obtained from studies and tests considered reliable; results, however, are not guaranteed.



## Tips to Help You Get Accurate Formulation

**Does the nitrogen content** of your high-analysis fertilizers sometimes fail to meet minimum guarantees, despite the fact that you are using plenty of nitrogen in formulation? Are you forced to resort to excessive formulation to obtain your guaranteed nitrogen content? Have you detected the pungent odor of ammonia emerging from the exhaust pipe on the roof of your plant?

If you are faced with the problem of loss of nitrogen in ammoniation, it will pay you to take a careful look at your equipment and your methods.

In manufacturing pulverized or granular high-analysis fertilizers by batch or continuous mixing, failure to obtain the desired nitrogen content is often due to poor combination of ammonia with

superphosphate and any added acids in the mixer.

Uniform distribution of the acid throughout the mass is just as important as uniform distribution of the ammoniating media. Uniform distribution insures effective utilization of all ingredients.

Efficient maintenance and use of correctly-designed distribution pipes are essential to uniform distribution of the acid and the ammoniating media. Correct techniques of operation must be observed to derive full value from your equipment.

A distribution pipe is basically a metering manifold and accuracy of metering ingredients is vitally important. This accuracy can be destroyed by cor-



Fifty percent earlier harvest of pulpwood from fertilized forest land than from unfertilized land provides a strong reason for forest fertilization.

## Forest Fertilizer Know-How Beginning to Pay Profits

**Fertilizing forest trees** to get a bigger and faster harvest of pulpwood, timber and other wood products is now being practiced on a small scale in many states. It is the newest method of making wood production catch up with demand.

Increased planting of forest trees has been some help but, slow growth on poor soils, insect and disease damage and forest fires have been major detriments. Forest fires alone ruin trees on an area of 23 million acres a year, an area equal to the entire state of Indiana. We now have 489 million acres of commercial forest land and an annual growth rate of only 47 million board feet. Much of this land is not producing any appreciable growth worth harvesting. In 40 years, it is estimated we will need 80 to 100 million board feet a year.

### Aerial Application

The first aerial application of mixed fertilizer to forest lands in this country was by Allied Chemical Corporation, in cooperation with Rutgers University, in 1956. This was used on a red pine stand on poor soil, and the fertilizer has greatly improved the growth and health of the trees. In Europe, Japan and other areas where wood is scarcer and more valuable than here, forest fertilization has been practiced for years. Fertilizer tests are

now being conducted in many states of this country by state colleges, the U.S.D.A. Forest Service, and by pulp and lumber companies. Aerial application now makes it practical to fertilize standing timber quickly at a low cost of 1 to 2 cents per pound of fertilizer applied. Most applications have been at rates of 100 to 400 pounds per acre.

### Market Potential

Forest tree nurseries are already using fertilizer, both to speed growth of seedlings and to produce sturdier planting stock that survives transplanting better. Lumber companies are finding that fertilization improves seed production and helps improve natural re-seeding as well as seed production for nursery planting. Pelleted fertilizer, for use in planting small trees, is also helping to make new plantations get a faster start.

The biggest single fertilizer market is standing timber. Trees need the same nutrients as other crops, though not as large a quantity. The best low-cost results will come from aerial application of fertilizer to trees growing on poor sandy soil, on badly leached or eroded soil in heavy rainfall areas, on land lacking humus, or where humus such as leaf cover on the soil is not rotting down into active form. Poor, burned-over, spoil-

bank or cut-over land that is bare or has a weak "second-growth" will benefit greatly from fertilizer. When you consider that a large part of our forest and farm woodland is on soils not good enough for any other crop, you can see that there is a huge potential for fertilizer use. Estimates show that fertilizer can bring pulpwood stands to market within 20 years instead of the typical 30 years without fertilizer. On the other hand, slow-growing hardwoods of the Northeast—where investment is tied up for 40 or 50 years, and where close annual rings improve lumber quality for special markets—are the least promising market for fertilizer.

### Kinds of Fertilizer

Different kinds of trees require different fertilizer ratios, and the same trees on different soils require different analyses. Nitrogen is essential in most forest fertilizer programs. In fact, nitrogen alone has worked well for increasing seed production of such trees as Douglas Fir. On sandy soils, potash is essential for most types of trees, and phosphorus is needed for new plantings of trees on most forest soils. The specific points on how to fertilize trees for profit are being worked out, but the answers aren't all in. Likewise, the number of fertilizer applications that pay on a tree crop before harvest still needs clarification.

It is not too early to stimulate forest fertilization in your sales area. The market is just ahead, and alert fertilizer men who take an interest in forest fertilization will capture this market. The demand for tree products keeps growing, and most forest soils lack sufficient plant food nutrients to produce the most profitable wood products.



Forest tree nurseries use large amounts of fertilizer.

**The best N for your N-P-K**



## NITROGEN SOLUTIONS

|   | CHEMICAL COMPOSITION % |                   |                  |      |       |                          | PHYSICAL PROPERTIES                             |                           |  |  |
|---|------------------------|-------------------|------------------|------|-------|--------------------------|---|---------------------------|--|--|
|   | Total Nitrogen         | Anhydrous Ammonia | Ammonium Nitrate | Urea | Water | Nitrate N of Total N (%) | Neutralizing Ammonia Per Unit of Total N (lbs.) | Approx. Sp. Grav. at 60°F | Approx. Vap. Press. at 104°F per Sq. In. Gauge | Approx. Temp. at Which Salt Begins to Crystallize °F |
| <b>NITRANA®</b>                           |                        |                   |                  |      |       |                          |   |                           |  |  |
| <b>2</b>                                  | 41.0                   | 22.2              | 65.0             | —    | 12.8  | 27.7                     | 10.8  | 1.137                     | 10   | 21   |
| <b>2M</b>                                 | 44.0                   | 23.8              | 69.8             | —    | 6.4   | 27.8                     | 10.8  | 1.147                     | 18   | 15   |
| <b>3</b>                                  | 41.0                   | 26.3              | 55.5             | —    | 18.2  | 23.6                     | 12.8  | 1.079                     | 17   | -25  |
| <b>3M</b>                                 | 44.0                   | 28.0              | 60.0             | —    | 12.0  | 23.9                     | 12.7  | 1.083                     | 25   | -36  |
| <b>3MC</b>                                | 47.0                   | 29.7              | 64.5             | —    | 5.8   | 24.0                     | 12.6  | 1.089                     | 34   | -30  |
| <b>4</b>                                  | 37.0                   | 16.6              | 66.8             | —    | 16.6  | 31.5                     | 8.9   | 1.184                     | 1  | 56   |
| <b>4M</b>                                 | 41.0                   | 19.0              | 72.5             | —    | 8.5   | 30.9                     | 9.2   | 1.194                     | 7  | 61   |
| <b>6</b>                                  | 49.0                   | 34.0              | 60.0             | —    | 6.0   | 21.4                     | 13.9  | 1.050                     | 48   | -52  |
| <b>7</b>                                  | 45.0                   | 25.3              | 69.2             | —    | 5.5   | 26.7                     | 11.2  | 1.134                     | 22   | 1  |
| <b>URANA®</b>                             |                        |                   |                  |      |       |                          |   |                           |  |  |
| <b>6C</b>                                 | 43.0                   | 20.0              | 68.0             | 6.0  | 6.0   | 27.7                     | 9.3   | 1.180                     | 12   | 39   |
| <b>6M</b>                                 | 44.0                   | 22.0              | 66.0             | 6.0  | 6.0   | 26.3                     | 10.0  | 1.158                     | 17   | 14   |
| <b>10</b>                                 | 44.4                   | 24.5              | 56.0             | 10.0 | 9.5   | 22.1                     | 11.0  | 1.114                     | 22   | -15  |
| <b>11</b>                                 | 41.0                   | 19.0              | 58.0             | 11.0 | 12.0  | 24.7                     | 9.2   | 1.162                     | 10   | 7  |
| <b>12</b>                                 | 44.4                   | 26.0              | 50.0             | 12.0 | 12.0  | 19.7                     | 11.7  | 1.087                     | 25   | -7   |
| <b>13</b>                                 | 49.0                   | 33.0              | 45.1             | 13.0 | 8.9   | 16.1                     | 13.5  | 1.033                     | 51   | -17  |
| <b>DURANA® (contains 8% formaldehyde)</b> |                        |                   |                  |      |       |                          |   |                           |  |  |
| <b>20</b>                                 | 37.0                   | 13.3              | 53.4             | 15.9 | 9.4   | 25.3                     | 7.2   | 1.235                     | 0  | 36   |
| <b>U-A-S®</b>                             |                        |                   |                  |      |       |                          |   |                           |  |  |
| <b>A</b>                                  | 45.4                   | 36.8              | —                | 32.5 | 30.7  | —                        | 16.2  | 0.932                     | 57   | 16   |
| <b>B</b>                                  | 45.3                   | 30.6              | —                | 43.1 | 26.3  | —                        | 13.5  | 0.978                     | 48   | 46   |
| <b>ANHYDROUS AMMONIA</b>                  | 82.2                   | 99.9              | —                | —    | —     | —                        | 24.3  | 0.618                     | 211  | -108   |

Other ARCADIAN® Products:

**URAN® and FERAN® Solutions**  
**Ammonia Liquor • N-dure®**  
**A-N-L® • Ammonium Nitrate**  
**UREA 45 • Nitrate of Soda**  
**Sulphate of Ammonia**

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The Big Question . . .

# Must Fertilizer Label Guarantee Secondary Nutrient Content?

## NO! NO! NO! Say Industry Leaders Who Term Proposal 'Unnecessary and Unfair'

**EDITOR'S NOTE:** In view of the country-wide interest of fertilizer manufacturers in proposed steps to change laws governing the declaration of minor element content of fertilizer mixtures, Croplife contacted a number of key people in the fertilizer trade for their comments on the proposal. We wish to express appreciation to these executives, located in various sections of the country, for their cooperation in responding so well, and also for the forthright manner in which they presented their views. The following material comprises excerpts from stated viewpoints of industry people, plus a look at the situation through the eyes of the control officials.

### PROPOSED REGULATION For Adoption Under State Fertilizer Laws

The following proposed regulation on minor elements was drafted on Aug. 25, 1961, at a meeting of the Association of American Fertilizer Control Officials Committee on Fertilizer Guarantees and Tolerances, fertilizer industry representatives and state and federal agronomists representative of the different geographical regions of the U.S.:

Additional Plant Nutrients, besides nitrogen, phosphorus and potassium, when mentioned or claimed on the label or container shall be registered and shall be guaranteed. Guarantees shall be made on the elemental basis. Sources of the elements guaranteed shall be shown on the application for registration. When claims for such nutrients are made on the label, container, or application for registration, the minimum percentages which will be accepted for registration are as follows:

| Element               | %      |
|-----------------------|--------|
| Calcium (Ca) .....    | 1.00   |
| Magnesium (Mg) .....  | 0.50   |
| Sulfur (S) .....      | 1.00   |
| Boron (B) .....       | 0.02   |
| Chlorine (Cl) .....   | 0.10   |
| Cobalt (Co) .....     | 0.0005 |
| Copper (Cu) .....     | 0.05   |
| Iron (Fe) .....       | 0.10   |
| Manganese (Mn) .....  | 0.05   |
| Molybdenum (Mo) ..... | 0.0005 |
| Sodium (Na) .....     | 0.10   |
| Zinc (Zn) .....       | 0.05   |

Guarantees or claims for the above-listed additional plant nutrients are the only ones which will be accepted. Proposed labels and directions for use of the fertilizer shall be furnished with the application for registration upon the request. Warning or caution statements are required on the label for any product which contains 0.03% or more of boron in a water-soluble form or 0.001% or more of molybdenum. Any of the above-listed elements which are guaranteed shall appear in the order listed, immediately following guarantees for the primary nutrients, nitrogen, phosphorus and potassium.

A VERITABLE hornets' nest has been stirred up within the fertilizer industry over proposed regulations governing the extent to which manufacturers must declare the content of minor, trace, or secondary elements in mixed goods, beyond the usual statements of nitrogen, phosphorus, and potash units.

The Association of American Fertilizer Control Officials on one side says that guarantees should be published covering the amounts of secondary elements in a product. The subject is high on the agenda for the AAFCO's annual meeting in Washington Oct. 25-26, and it is at this gathering that debate is expected to reach its climax, resulting in decisions

directly affecting the industry.

Industry leaders have branded the proposal variously as "unnecessary", "unworkable" and "unjust."

One spokesman said his company "objects strenuously" to the proposed regulation which he says would grant control officials the power to "establish a minimum list of elements that can be used in manufacturing plant foods; also in establishing the minimum quantity for each element in the proposed minimum list." He says equal objection is made to the granting of "such unlimited power through the words 'in any manner or form.'"

This industry commentator observes that establishing a minimum list of elements and a minimum quantity for each element "stifles initiative and research by manufacturers who have substantial investments in

Turn to INDUSTRY VIEW page 40



## YES! YES! YES! Say State Control Men Following Year-Long Study of Situation

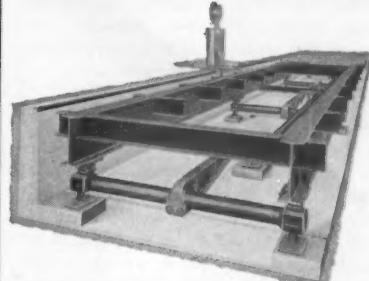
DEFINITE ACTION toward the promulgation of secondary and micro-nutrient regulations has been taken in a number of states according to Forrest W. Quackenbush, Purdue University, Lafayette, Ind., chairman of the Association of American Fertilizer Control Officials committee on guarantees and tolerances. According to a roundup of information by Croplife at press time, the states of Indiana and Kentucky are definitely taking steps toward adoption of the proposed resolution while a number of others indicate they are "about ready" to do so. The states of North Dakota, South Dakota, Minnesota, Iowa and Nebraska held a recent meeting following which they said they would definitely move in

that direction, but had not done so at press time.

Objective of the proposed regulation, Dr. Quackenbush says in his report of the committee's activity, is to bring uniformity to state laws covering the labeling of secondary and micronutrients in fertilizers. Most of the steps in this direction have been taken during 1961, beginning with a 13-state meeting in Chicago on Feb. 14. Here is the report covering this meeting and subsequent developments, as presented by Dr. Quackenbush: "Present at this Chicago meeting were state officials and experiment station agronomists from nearly all of the thirteen states, as well as representation of fertilizer

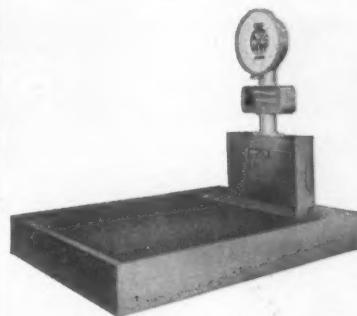
Turn to CONTROL OFFICIALS page 41

## Winslow COST SAVING INDUSTRIAL SCALES



**TYPE S 4-SECTION TRUCK SCALE WITH DIAL**

Capacities—15 tons thru 80 tons.  
Platforms—18' x 9' thru 70' x 10'.



**SELF-CONTAINED PLATFORM SCALE WITH DIAL**

Standard or built to your specifications for weighing containers of most any material.

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## SERVE ALL YOUR FERTILIZER CUSTOMERS BETTER

SPREADING ACCURACY FOR SMALL OR BIG JOBS



**2-4 TONS**

Model N-28 (2 ton) and the N-48 (4 ton) shown, have unique no-spring, individual wheel suspension—all wheels carry equal weight at all times. These tractor pulled "compacts" make money as rental units.

WRITE, WIRE OR PHONE COLLECT

for further information about the P710 and the N-48, plus a full line of other bulk fertilizer spreaders and bodies, bulk feed bodies, bulk and sack bodies and unloaders.



**MODEL P710**

(Available in three spreading widths—24, 40 and 50 ft.)

**4-13 TONS**

Model P710 shown, has a 7 ton capacity. Other "P" models available from 4 to 13 tons. All "P" models are available in 3 spreading widths, and can accurately spread by test—75 lbs. per acre on up.



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## NEW CANADIAN PLANT

Shareholders of Interprovincial Cooperatives, Ltd., voted recently at Vancouver, B.C., to proceed with plans for a new chemical complex in Saskatoon, Sask. Plans are now beyond the detailed engineering and design phase, the co-op reports, and work was to begin this fall in preparing the land for construction.

According to the co-op, the new plant will be the first of its type in Canada to manufacture herbicides through every stage from raw materials to the finished product. It will have the first caustic soda and chlorine manufacturing unit in Saskatchewan, and these products will be used in herbicide manufacturing.

George H. Fast is general manager of Interprovincial.

## Prospects Good in Canada for Greater Use of Pesticides

Continuing control efforts in Canada against insect pests such as the spruce budworm and grasshoppers, and weeds like wild oats, are expected to contribute to an anticipated increase of 5-10% in pesticide use in that country during the next five years, according to information from the Business and Defense Services Administration.

In connection with this increased use of pesticides will be a continuing growth of imports from the U.S., which now comprise about half of all pesticide products sold in Canada, the report says.

Figures on U.S. pesticide exports to Canada in 1960, as presented by the

Bureau of the Census, U.S. Department of Commerce, are seen in the accompanying table.

Evidence points to a continuing spread of the spruce budworm which will require control programs perhaps larger than existing ones for a number of years in the future, the report indicates.

Somewhat the same story is true of wild oats which cover millions of Canadian acres and will require long-range control programs to bring this crop hazard under control.

Pesticide sales in Canada were \$28.2 million during the year ended September 30, 1960, BDSA says. This represented an increase of 6.7% over the \$26.4 million tallied during the previous 12-month period.

Here are the sales figures for specific products for 1960 as compared to the previous year:

Agricultural dusts and sprays, \$10.2 million, against \$10 million in 1959.

Livestock pest control products, \$1.9 million against \$1.8 million.

Household and industrial insecticides, \$6 million against \$5.6 million.

Rodenticides registered \$532,351 against \$465,923, and unspecified uses, \$604,708 against \$505,661.

Production of pesticides in Canada itself has been on the increase for a number of years, according to BDSA figures. In 1957, local pesticide production was \$9 million; in 1958, \$10 million; and in 1959, \$12.2 million. Production is expected to increase significantly with new manufacturing facilities now either in actual operation or in the planning stage.

### U.S. PESTICIDE EXPORTS TO CANADA, 1960

|  | Pounds         |
|--|----------------|
| Copper sulfate .....   | 654,400,000    |
| Lead arsenate .....  | 81,700,000     |
| Calcium arsenite .....   | 47,700,000     |
| Pyrethrum extract .....  | 1,600,000      |
| Paradichlorobenzene .....  | 2,852,400,000  |
| DDT, technical .....   | 1,225,100,000  |
| DDT, formulations containing 20-74% DDT .....  | 438,500,000    |
| DDT, formulations containing 75% or more DDT .....   | 5,000,000      |
| BHC, technical, and formulations containing 6% or more gamma isomer of BHC .....                                     | 5,700,000      |
| Herbicides, 2,4-D and 2,4,5-T as parent acid .....   | 3,950,500,000  |
| Herbicides, n.e.c. ....  | 3,155,100,000  |
| Agricultural sulfur, n.e.c., except formulations .....   | 606,200,000    |
| Organic phosphate insecticide concentrates and formulations of 15% or more organic phosphates, n.e.c. ....           | 421,400,000    |
| Polychlor insecticide, technical, insecticides, concentrates and formulations of 15% or more polychloro, n.e.c. .... | 2,755,200,000  |
| Agricultural insecticides and insecticide formulations, n.e.c. ....  | 1,803,000,000  |
| Fungicides .....   | 4,593,800,000  |
| Fumigants .....  | 395,400,000    |
| Insecticides and other pesticides, household and industrial, n.e.c. ....   | 3,010,100,000  |
| Disinfectants, household and industrial, n.e.c. ....   | 3,475,800,000  |
| Total .....  | 29,478,700,000 |

Source: Bureau of the Census.

n.e.c.: Not elsewhere classified.



### BEMIS BAG TOP PRINTER

**Bemis' new automatic Bag Top Printer assures you of clear, uniform printing above the sewing line of multiwall paper bags as they are being closed. It has an amazing number of applications for your business.**

*Use it to print product codes, specifications, data for shipping and handling identification, commodity analyses, product packaging date. And you can take it from there.*

Mounted on a Bemis sewing pedestal, the Bag Top Printer shown at left imprints a bag as it is being sewn closed. In operation, an attendant simply leads the edge of the bag into the printing guide. The bag is then coded. An actuator starts the sewing head to sew the bag. The thread is automatically cut when the bag leaves the sewing head.

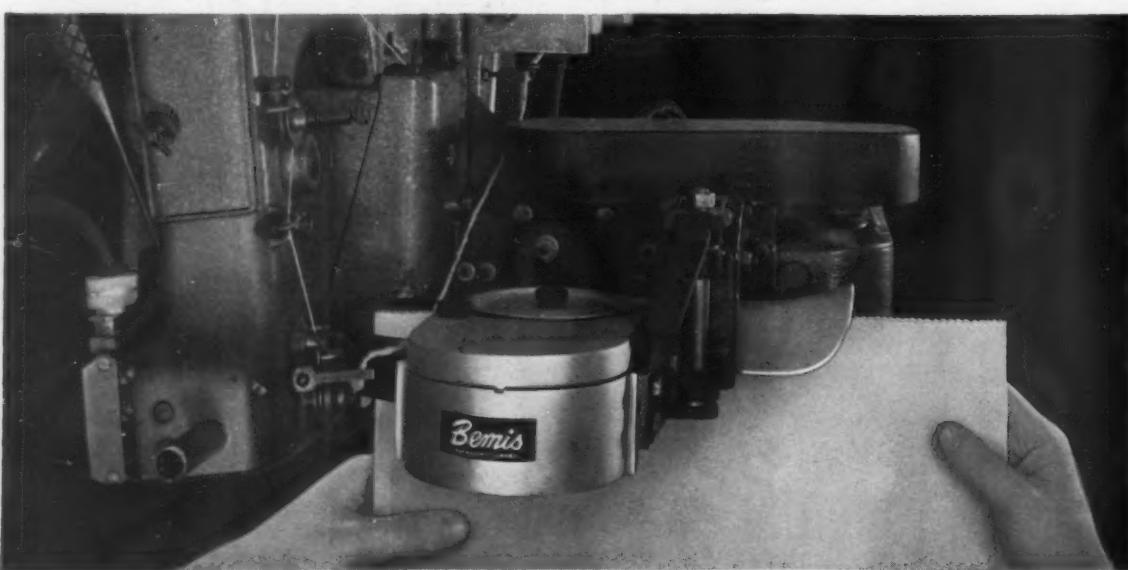
Power-driven, the Bag Top Printer uses a pre-inked roll

that eliminates fluid inks, solvents, etc. Type, on a rotary print wheel, can be quickly changed.

For more information how a Bag Top Printer can help increase the efficiency of your packaging operation, just get in touch with us.

### Bemis

where packaging ideas are born  
General Offices:  
408 Pine Street, Box 100,  
St. Louis 2, Mo.



## Southern Weed Meeting Announced for January

The 15th annual meeting of the Southern Weed Conference will be held at Chattanooga, Tenn., Jan. 17-19, 1962, according to Dr. Walter K. Porter, Jr., president. Convention headquarters will be Hotel Patten.

Some 300 research and education workers are expected to attend, representing colleges, chemical companies, equipment manufacturers, public service organizations, public health and regulatory agencies and others concerned with control of weeds.

Various aspects of weed control, including work on weeds in crops, pastures, forests, right-of-ways, water and rangelands will be discussed.

A tour of brush control work by Tennessee Valley Authority and Bowater Southern Corp. will be a feature of the meeting. The equipment used will be displayed.

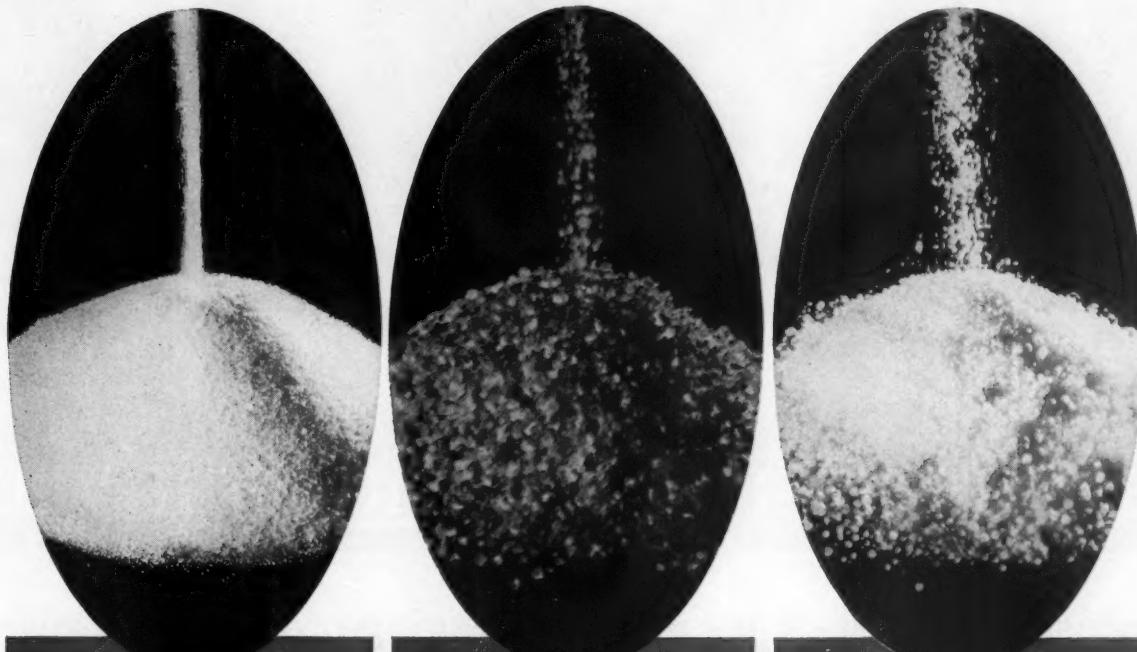
Besides Dr. Porter, superintendent, Delta Experiment Station, Stoneville, Miss., other officers of the conference are Dr. John T. Holstun, U.S. Department of Agriculture, Stoneville, and Dr. R. E. Frans, University of Arkansas, Fayetteville.

## Coastal Chemical Buys Arkansas Plant Food Co.

Stockholders of Arkansas Plant Food Co., North Little Rock, Ark., recently approved transfer of the company's fixed assets to the Coastal Chemical Corp., Yazoo City, Miss., in exchange for stock. The latter firm is affiliated with the Arkansas Farm Bureau Federation.

Coastal will maintain and operate the plant facilities of the Arkansas firm which began operations in 1950. It has a capacity of about 50,000 tons a year.

# 3 types of POTASH specially sized for you..

**USB STANDARD 62**62/63% K<sub>2</sub>O

Formerly HIGRAGE

**USB GRANULAR 60**60% K<sub>2</sub>O

Formerly GRANULAR

**USB COARSE 62**62/63% K<sub>2</sub>O

Formerly HIGRAGE GRANULAR

## To make the best fertilizers...

Each of our three types of high quality muriate of potash is ideally sized to meet your particular manufacturing requirements. Both of the white grades — STANDARD and COARSE — contain the highest possible K<sub>2</sub>O (62/63%) and make feasible the manufacture of the highest analysis mixtures. Our GRANULAR 60 is ideally suited for mixtures requiring muriate of a larger particle size . . . or for direct application. All three products are refined to assure free-flowing and non-caking properties during handling and storage.

For nearly thirty years our products and services have kept pace with your exacting needs. Call, telex or wire one of our nearby offices for prompt delivery.

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## Discovered—an airtight multiwall!

Simple demonstration helps solve major packaging problem for Dow Chemical

The multiwall bag you see here contains nothing but air. The man standing on it weighs 200 lbs. Yet no air can escape. *That's because the bag is Union-Camp's amazing new UNISEAL.*

It ended a two-year search by Dow Chemical for a package that would provide a perfect vapor barrier.

### Protection problem critical

The search began when Dow first developed an effective new crab grass killer. To successfully market this new product, an unusually tight package—even air-tight—was essential. The ideal package also had to be sturdy, printable, easy to handle and ship. And economical.

One day Dow engineers witnessed the UNISEAL demonstration you see above. If the bag could lock in air, then it must have the perfect vapor barrier. Further testing proved they were right.

### Seals safely—and saves, too

The remarkable new UNISEAL bag features four plies. An outer sheet of semi-bleached paper (for top print-

ability). Two middle plies of kraft. And an inner ply of kraft laminated to aluminum foil with polyethylene. A final extrusion coating of polyethylene resin over the foil serves as the heat-sealing medium for the inner seam and bottom.

The bag can easily be filled on *any standard filling equipment*. A special machine heat-seals the inner ply and applies adhesive to the tops of the outer plies. It then folds over the lip and pastes it to the outside of the bag. Finally, the machine centers a



**UNISEAL'S unique inner ply** is made of kraft paper laminated with polyethylene to aluminum foil. Bags can be easily filled on any standard filling equipment.



**Secret of sealing.** Special machine heat-seals inner ply, folds lip over and pastes to outside of bag. Finally, gum tape is applied (arrow) forming a positive airtight closure.

strip of gum tape over the edge of the lip to form a positive *air-tight* closure.

Apart from providing a perfect vapor barrier, Union-Camp's UNISEAL bag also turned out to be the least expensive container of any previously tried!

### How much could a Union-Camp multiwall idea save you?

Hundreds of companies, large and small, have cut costs through Union-Camp multiwall ideas like this. Our comprehensive packaging service—5-Star Plan—covers bag construction, design, specifications control, packaging machinery and a survey of your plant. And it's free.

See your local Union-Camp multiwall man for complete details.

**FREE 16-PAGE BOOKLET** shows how packers like yourself have achieved greater economy in their multiwall packaging operations. Write Dept. M-4.



**UNION-CAMP**  
MULTIWALL BAGS

Union Bag-Camp Paper Corporation • 233 Broadway N.Y. 7, N.Y.

## Fire Hazards of Ammonium Nitrate Go Under Scrutiny

An extensive research program into the fire hazards of ammonium nitrate and related materials will be undertaken by the Bureau of Mines, U.S. Department of Interior, under a cooperative agreement with the Manufacturing Chemists Assn., Inc.

The project is expected to begin soon and will run for one year, with the entire cost of \$60,000 borne by MCA. The agreement provides for an extension beyond the one-year period if necessary.

According to the cooperative agreement, the research will cover not only the fire hazards of ammonium nitrate, but of such related systems as nitric acid-hydrocarbon, ammonium nitrate-urea, and combinations of these systems.

The Bureau will study the effect of contaminants, and of confinement on the detonability of solid and molten ammonium nitrate and evaluate its sensitivity to initiation by the close proximity detonation of other explosive systems, such as may have been present during a train derailment, fire and explosion Dec. 17, 1960, near Traskwood, Ark.

Although an attempt will be made to establish the relative probability of causes of the Traskwood incident, a longer range goal will be to define more precisely the various conditions under which ammonium nitrate may be stored and transported safely.

The Bureau's investigation will be carried out under the direction of Dr. Robert W. Van Dolah, chief, Explosives Research Laboratory, Pittsburgh, Pa. Dr. W. G. McKenna of New York City, representing the Bureau of Explosives of the Association of American Railroads, will serve as a consultant in the study.

MCA, long interested in safety procedures regarding ammonium nitrate, will work with the Bureau through the former's Ammonium Nitrate Technical Committee which was established in 1949.

## Illinois Firm Expands Services to Customers

Aylco Chemical Co., Sullivan, Ill., has announced gains in the number of retail outlets handling its liquid fertilizers, and also an increase in the number of soil tests conducted in its recently-enlarged laboratory.

The company reported Sept. 1 that it had gained its 1961 quota of 22 retail outlets situated in 20 counties in central Illinois. The total marks a gain of 14 over the number of last year.

The stepped-up soil tests were made possible by Aylco's expanded facilities. The tests are used to make specific recommendations for liquid fertilizer use. Samples taken and tested over the first six months of 1961 cover 50,000 acres, the company says. The gain in soil tests reaches 1,400%, based on results thus far this year, Aylco reports.

Aylco recently graduated, from an intensive course of instruction, supervisors of its 22 retail outlets, with special emphasis placed on practical techniques to increase service to customers.

Equipment at each outlet has been supplemented now to include four tanks, two of 10,000-gal. capacity and two of 6,000 gal. each, two to four spreader trucks, and five applicators for insecticides and herbicides.

### NEW CONDITIONING AGENT

Armour Industrial Chemical Co., Chicago, has developed a line of conditioning agents which it says can change the hydrophylic surface of a material to a hydrophobic surface and thus reduce dusting and caking of products.

## Jamaican Fertilizer Plant Announced in N.Y.

An organic fertilizer plant with an annual capacity of 60,000 tons is being established at Kingston, Jamaica, by a group of U.S. investors, it was reported in New York by the Jamaica Industrial Development Corp.

By agreement with the Kingston and St. Andrew Corp. (the municipal government of Kingston and its suburbs) the plant will receive all of the garbage of the island's capital city for processing. The finished product will be distributed mainly through the Jamaican Agricultural Society.

The firm, incorporated in Jamaica under the title "Jamaica Organic Fertilizers, Ltd." will operate under the island's industrial incentive laws which permit, among other concessions, freedom from corporate income taxes for up to seven years.

## FORMULATIONS

*Continued from page 18*

avoids its prolonged storage either by him or by the plant or distributor will go a long way toward minimizing the effects and costs of Methyl Parathion instability. A key element in the use and control of inventories is the analysis of stored concentrates before use and the analysis of carry-over stocks before sale. Time limits on use without analysis should be set and these should apply to material used within and between plants as well as material moved to distributors or growers.

5. **Provide suitable overages.** The determination of an adequate coverage of Methyl Parathion will depend on several factors including the application of the prac-

tices discussed above. Because of the relatively high direct cost of overages, careful consideration of good formulation and inventory practice will provide direct savings.

In the formulation of Methyl Parathion dusts and concentrates, heat from any source should be avoided. If direct impregnation of field strength dusts is practiced, proportions of absorbent carriers and inert diluents should be about the same as in let-down dusts prepared from concentrates. The same principles of choice of materials and deactivation should be followed.

Some loss of xylene which is present in the technical can be expected from the finished dust in manufacture and storage. This will tend to change both weight and analysis of the bagged product. For this reason, along with other obvious advantages, 80% technical is to be preferred over more dilute technicals.



## precision-sized granular potash



- ✓ Dust-free ✓ Uniform
- ✓ Won't crumble, settle-out in shipment!

In response to customer demand, IMC engineers have perfected a new, compact, precision-sized granular potash! Each granule is specially compacted and processed to produce superior cohesive strength — to prevent granule crumbling or breakdown in shipment, in mixing and handling.

This new potash material is precision manufactured to a new, improved screen size. It's dust-free, flows easily, won't bridge or pack. Delivering 60% K<sub>2</sub>O minimum, this high-analysis potash is ideally suited for direct

application... and contributes substantially to a more uniform mixed-goods formula. Result: you get superior physical characteristics without effecting chemical properties in your fertilizers or in the soil.

New IMC granular potash specification sheets and product samples are now available to you through your IMC representative.

Look to IMC for new and improved raw materials and for Full Orbit Services — designed to help you consolidate and extend your profit position.

### A COMPLETE LINE OF IMC RAW MATERIALS

- Phosphate Rock
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- Triple Superphosphate (coarse, granular, run-of-pile)
- Phosphoric Acid
- Muriate of Potash (coarse, standard, new precision-sized granular)
- Sulphate-of-Potash
- Sul-Po-Mag®



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## Turf Conference Cites Fertilization and Control of Nematodes as Keys to Success

Fertilization, controlling plant diseases and other pests, soil mixtures and drainage play important parts in turf management, it was emphasized by speakers at the second Alabama Turfgrass Short Course, conducted Sept. 7-8 at Auburn University, Auburn, Ala. Some 85 persons were in attendance.

Getting special attention at the conference were plant diseases, insects and nematodes and their control. Leading off with a discussion of southern turfgrass diseases was Homer D. Wells, Tifton, Ga., USDA Agricultural Research Service pathologist. He said that both perennial grasses and winter grass are susceptible to disease attacks which reduce their utility. Among the most important diseases named were

brown patch, dollar spot, *Helminthosporium* leaf and turf spots, *Curvularia* fading-out, gray leaf spot, fairy rings and slime molds. He suggested types of fungicides which should be used to control each disease.

Dr. W. G. Eden, Auburn University Agricultural Experiment Station entomologist, said it was "unthinkable" for a grower to go to the expense of establishing a new sod without treating for soil pests. He recommended disking insecticide into soil with the fertilizer when establishing turfgrass at rates high enough to control white grubs and to give protection against many other soil insects. He called this technique "cheap insurance" against bug trouble.

Dr. Eden said many insects attack

turfgrass and several are important pests that must be controlled. Chinch bugs, fall armyworms, sod webworms, ants, white grubs, earthworms, ground pearls and leafhoppers were named as damaging pests that require control. The researchers recommended insecticides that will provide the needed control.

Nematodes were described as a major obstacle to growth of fine turf by Dr. Norman McGlohon, Auburn Extension Service pathologist. He said nematodes are responsible for much damage in the South that was previously blamed on insects, fungi and poor fertility. He explained that nematode damage results from the parasites feeding on grass roots. Destruction of feeder roots limits the amount of minerals and water that can be taken from the soil and root punctures provide means of entrance for disease organisms. Signs of nematode damage are similar to those associated with poor fertility. When

turf with poor growth, off-color and thinning out does respond to fertilization, chances are good that nematodes are involved, Dr. McGlohon pointed out.

The best method of preventing nematode damage is to treat soil before seeding or sodding, since control is more difficult in established turf, he said. He thus recommended having soil tested for nematodes ahead of planting and fumigating if the pests are present.

## U.S. Issues 3 Millionth Patent After 125 Years

A milestone in the history of the U.S. Patent Office was marked on Sept. 12, 1961, with the registering of the 3 millionth patent.

David L. Ladd, commissioner of patents, Washington, D.C., points out the significance of this milestone in the "Official Gazette" of Sept. 12:

"This total—in the 125 years since the numbering system in use today was started—is a tremendous volume by any standard. Surely it points up the complementary influence of the U.S. Patent System on the technological, scientific and economic growth of the country. This is a record of achievement for the genius, industry and inventiveness of Americans from all walks of life."

"These 3,000,000 patents, published and fully disclosed to the public, make up the greatest and most important treasure of applied technical knowledge in the world. Their influence on American creative and inventive genius is beyond calculation."

"The certain conclusion to be drawn from this milestone is that the U.S. has come a long way from an agricultural economy to the greatest and most productive industrial nation in the world. The Patent System as a stimulus to invention, in disclosing invention and inducing investment, has been a vital ingredient in this growth."

"It takes an impressive number, like 3,000,000, to remind us how far we have come and where we are headed."

## College Award Winners Announced by IMC

Twelve students at mining and agricultural colleges have been named winners of the 1961-62 Louis Ware senior-year scholarships. The \$1,000 awards are sponsored by International Minerals & Chemical Corp., Skokie, Ill.

In addition, the winners become eligible to compete for \$3,000-a-year, three-year fellowships, one in mining and one in agriculture. The scholarship-fellowship program is named in honor of the IMC board chairman who for 20 years was president of the company.

Winners of the 12 awards are chosen annually by special faculty committees at each school, and compete in their senior year for the fellowships. Agricultural scholarship winners are:

Lawrence Manahan, Cornell University; John Catey, Michigan State; David Harville, Iowa State; Bobby Lancaster, North Carolina State; Lawrence Beck, Purdue University, and Lewis Kastenschmidt, University of Wisconsin.

Mining scholarship winners are:

Thomas Tisone, Colorado School of Mines; John N. Johnson, Michigan College of Mining and Technology; William Hustrulid, Minnesota; David Delling, Missouri School of Mines; S. David Irons, Pennsylvania State, and Thomas Mika, Stanford.

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Now Chief Kay-Two-Oh can take time out to enjoy the Harvest Moon as he listens to the Indian Love Call with his Sweet Sioux — because he knows that it takes more than a moon, or even a medicine man, to bring in a good harvest.

Proper fertilizers are recognized in today's scientific farming methods as essential to producing bumper crops. The Chief is proud that the only business of

Pee-Cee-A is supplying potash for these fertilizers. It's gratifying to have helped in the production of a bountiful harvest.

It's also gratifying to the Chief to feel that Pee-Cee-A offers the best service possible. If his scouts can be of service to you, let him know!

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*PCA Standard 60% Muriate of Potash*

*PCA Coarse 60% Muriate of Potash*

*PCA Granular 60% Muriate of Potash*

*Potassium Chloride (99.9% KCL min.)*

*Sulphate of Potash*

# Fertilizer Solutions Assn. Meeting Plans Announced

Panel discussions on manufacturing and application problems and on sales techniques will feature the annual convention of the National Fertilizer Solutions Assn. at the Edgewater Beach Hotel, Chicago, Oct. 30-Nov. 1. The group will also elect officers, hold its annual banquet, name a "Man of the Year" and select an "Honorary Member."

According to the advance program, issued by W. Harold Schelm, executive secretary, Peoria, Ill., the opening sessions, Tuesday, Oct. 31, will be in charge of Bryce W. Strachan, Boynton Beach, Fla. Appearing on the program will be Donald J. Humphrey, Flo-Lizer, Inc., Kingston, Ohio; NFSA president; A. V. Slack, Tennessee Valley Authority, will speak on "The Future of Suspension Fertilizers," and J. D. Sykes, vice president of Ralston Purina Co., St. Louis, Mo., "Serving the Modern Farm Market."

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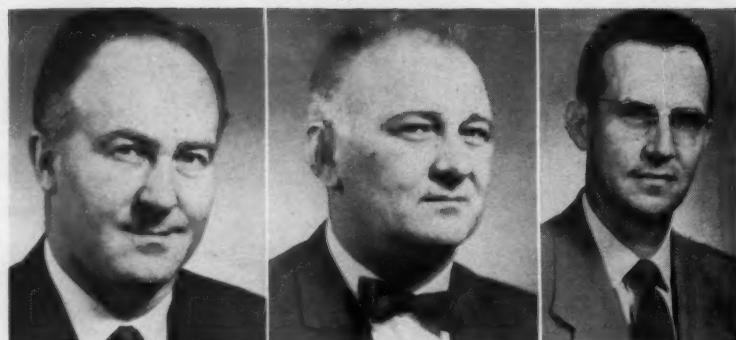
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George M. Beal

Joe M. Bohlen

A. V. Slack



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J. D. Sykes

Frank W. Lovejoy

## John Deere Co. Offices Move to New Location

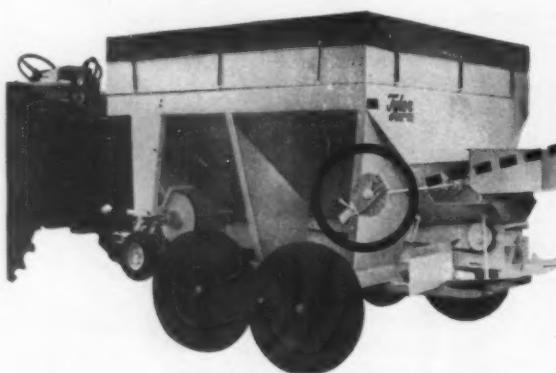
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W. W. Yeandle, president, announced the new offices are now located in the Ramada Building at 50th

and Yale Streets, Tulsa 14, Okla. Departments affected by the move include administrative, sales, accounting, traffic and advertising.

John Deere Chemical Co. manufactures fertilizer and feed grade urea, ammonia and urea-ammonia solutions at the Pryor plant. The Tulsa plant produces a complete line of ammonium phosphate fertilizers.

Every once in awhile a good idea comes along in any business—and a year ago it happened in the fertilizer industry when TYLER introduced the F2 Tractor Spreader and with it a new system of fertilizer application. Common sense engineering and practical merchandising has put hundreds of F2's in the field with excellent customer acceptance—and they're DOING THE JOB!



For descriptive literature and full information, write or call

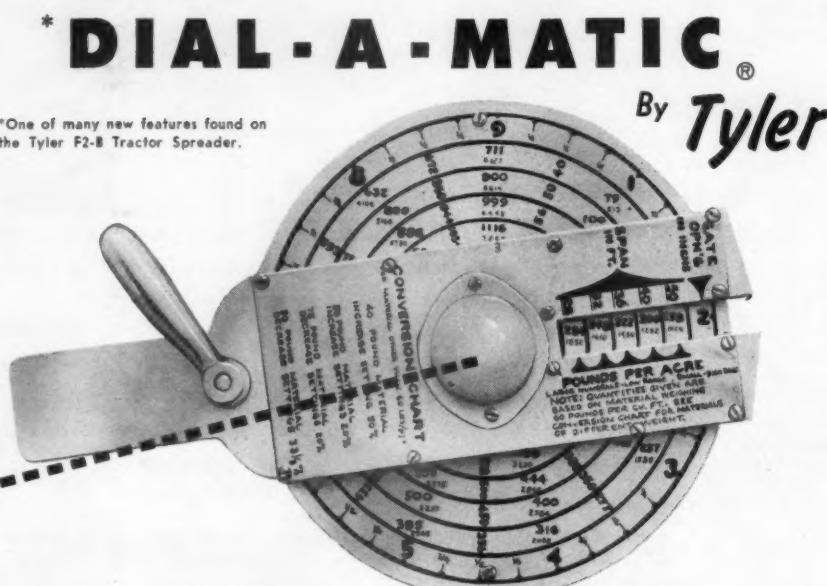
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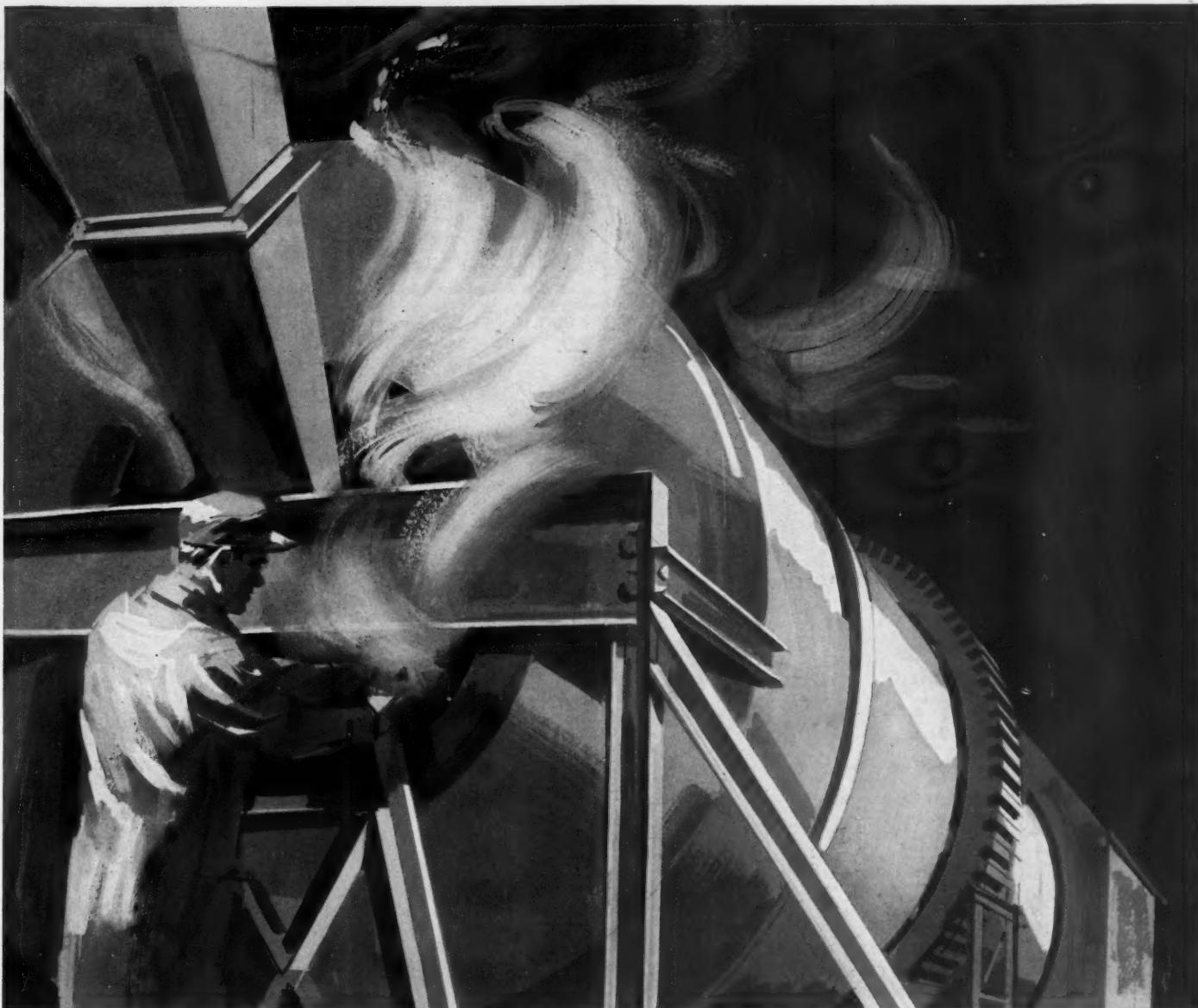


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- Heavy duty 10-inch stainless steel conveyor belt
- Rugged tubular steel frame
- Angled metering gate for smooth material flow
- Up to four-ton capacity

### METERING SO NEW—IT'S UNBELIEVABLE!

In this jet age of missiles and speed, it's a survival of the fittest . . . super mechanization and careful and precise engineering to produce products that will perform in the best way possible. TYLER introduces the Model F2-B — DIAL-A-MATIC SPREADER—A TOUGH MACHINE BUILT FOR A TOUGH JOB!



## Texaco can help you stop loss of fertilizer raw materials

Many people in management believe that nitrogen loss in ammoniation, over-analysis, bag breakage, loading and unloading, amounts to only 4 or 5%.

Actually, only the best-run plants have such low losses. More typically, they may approach 15%.

These are findings by Texaco technical experts who help tighten procedures in fertilizer plants as part of the over-all Texaco "Stop Loss" program. For instance, nitrogen losses — including losses of ammonia, N<sub>2</sub> and oxides of nitrogen — are found to be a prime problem in making mixed fertilizer. Our people can advise on proper methods of mixing to avoid losses during ammoniation . . . on plant processes such as crushing, screening, drying, cooling. You can also tap our experts' knowledge of transportation and unloading equipment, storage and handling.

Would you like to have a Texaco man visit you for a look at your possible losses? The service is free. Write to Texaco Inc., Petrochemical Sales Division, 135 East 42nd Street, New York 17, N. Y., or 332 South Michigan Avenue, Chicago, Illinois. Dept. CR-41.

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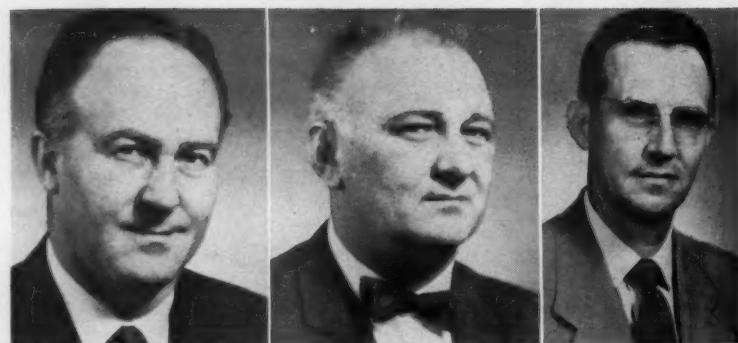
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## John Deere Co. Offices

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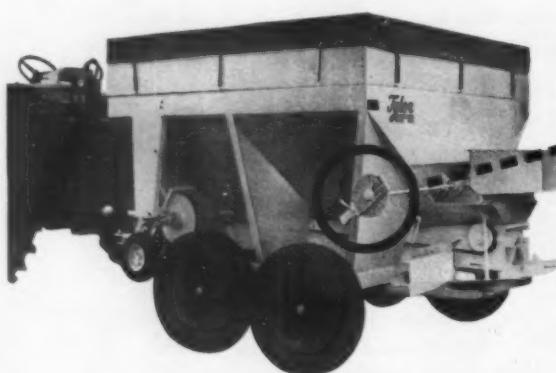
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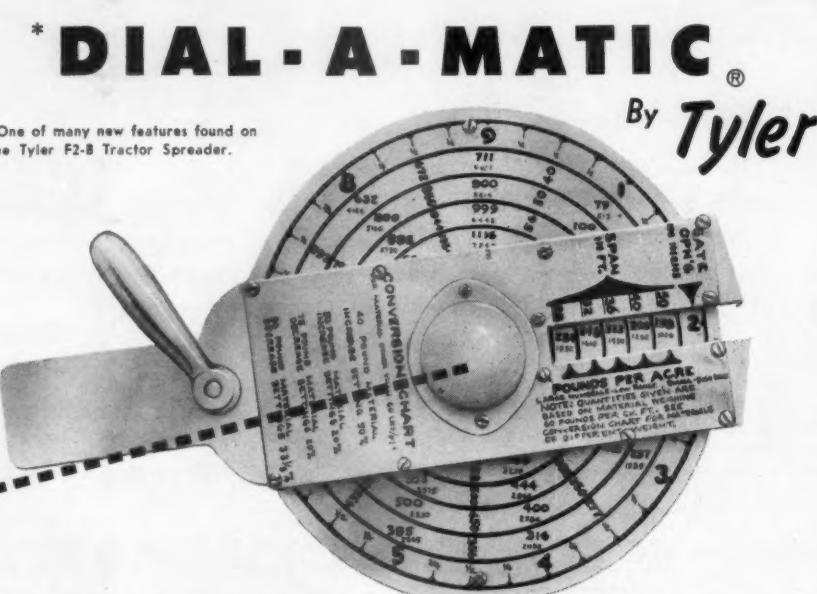
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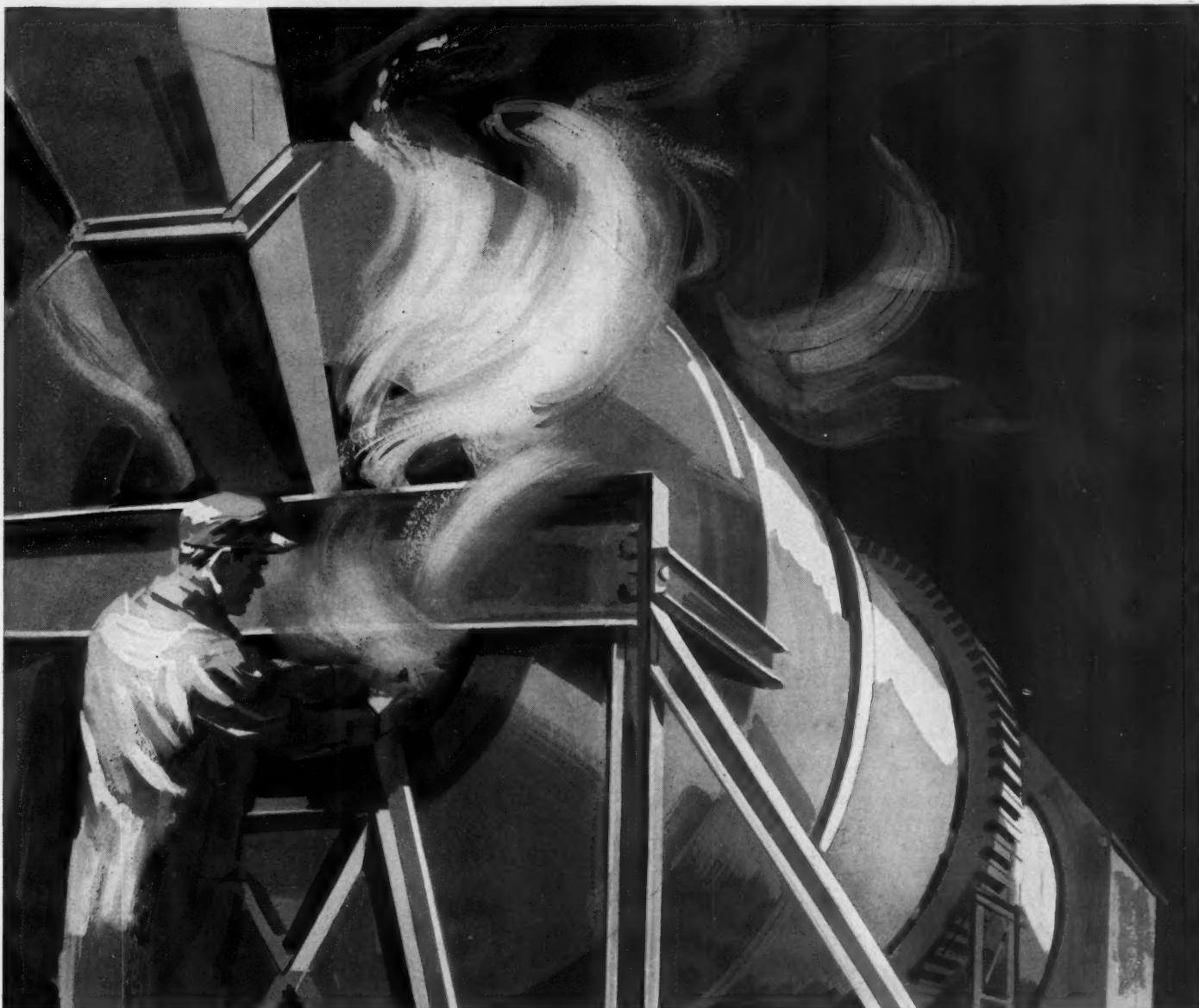


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- Up to four-ton capacity

### METERING SO NEW—IT'S UNBELIEVABLE!

In this jet age of missiles and speed, it's a survival of the fittest . . . super mechanization and careful and precise engineering to produce products that will perform in the best way possible. TYLER introduces the Model F2-B — DIAL-A-MATIC SPREADER—A TOUGH MACHINE BUILT FOR A TOUGH JOB!



## Texaco can help you stop loss of fertilizer raw materials

Many people in management believe that nitrogen loss in ammoniation, over-analysis, bag breakage, loading and unloading, amounts to only 4 or 5%.

Actually, only the best-run plants have such low losses. More typically, they may approach 15%.

These are findings by Texaco technical experts who help tighten procedures in fertilizer plants as part of the over-all Texaco "Stop Loss" program. For instance, nitrogen losses — including losses of ammonia, N<sub>2</sub> and oxides of nitrogen — are found to be a prime problem in making mixed fertilizer. Our people can advise on proper methods of mixing to avoid losses during ammoniation . . . on plant processes such as crushing, screening, drying, cooling. You can also tap our experts' knowledge of transportation and unloading equipment, storage and handling.

Would you like to have a Texaco man visit you for a look at your possible losses? The service is free. Write to Texaco Inc., Petrochemical Sales Division, 135 East 42nd Street, New York 17, N.Y., or 332 South Michigan Avenue, Chicago, Illinois. Dept. CR-41.

Tune In: Huntley-Brinkley Report, Monday Through Friday—NBC-TV



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PETROCHEMICALS

AQUA AMMONIA, ANHYDROUS AMMONIA, NITROGEN SOLUTIONS, DIISOBUTYLENE, CUMENE, BENZENE, TOLUENE, ODORLESS MINERAL SPIRITS, NAPHTHENIC ACID, PROPYLENE TETRAMER AND RUST INHIBITORS.

## New Machines Fail to Appear, So Soviets Dig 1961 Spud Crop by Hand

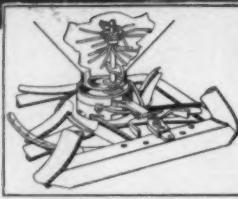
Soviet farmers will harvest 70% of Russia's potato crop by hand this year, according to the USSR's "Economics Gazette," unless there is a big

improvement in plans for mass production of farm machinery.

Only obsolete machines are being produced presently, the Soviet journal says, despite the existence of the prototype of a vastly-improved mechanized potato harvester. However, the better machine is not in production due to administrative delays.

Noting that "about 250-million

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EXCLUSIVE LELY FORCE-FEEDING SYSTEM

Simple in design yet robust in construction, the LELY Distributor's exclusive design features assure accurate and uniform spreading of all types of material—fertilizer, lime, seeds, pelletized 24D etc. Spreading range is fully adjustable, from 5 lbs. to 1500 lbs. per acre, with an effective spreading width up to 50 ft. (Does 25 acres an hour). Now available in 3 models—3-point hitch P.T.O. driven (illustrated), Tow type ground driven and Tow type P.T.O. driven. Hopper capacity 1000 lbs.

WRITE FOR FULL DETAILS

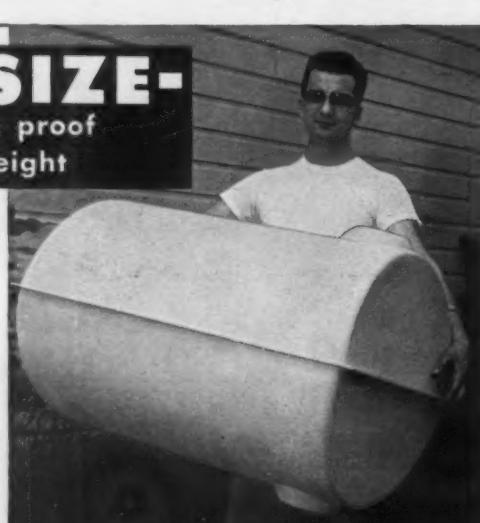
**LELY LTD., Agricultural Machinery,**   
P.O. Box 235, Burlington, Ontario, Canada  
U.S. Branch & Warehouse — Dover, Delaware

## NEW SIZE-

- ★ Corrosion proof
- ★ Light weight

## MFG 60- GALLON TANKS

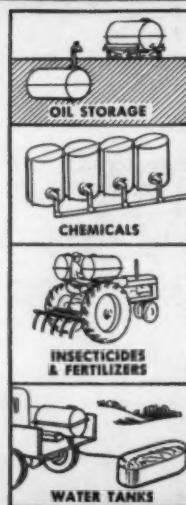
23" diameter  
34" long



Now—a smaller model of the popular 200-gallon tank made of Molded Fiber Glass—the tough, long-lasting material so much less expensive than stainless steel, yet stronger than steel, pound-for-pound!

Unaffected by most chemicals—impact resistant—light-weight and low in cost—MFG Tanks won't rust or deteriorate even in severe weather and exposure!

Easy to handle, easy to clean; translucent so you can see level of contents inside. Secret of strength is in pressure-molding in matched metal dies, so accept nothing less. Demand MFG! Phone or write for prices, dimensions, specifications, etc.



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man-days are used annually harvesting potatoes . . . and by the end of the seven-year plan the potato harvest will have grown almost twofold." Moscow's "Economics Gazette" has demanded that the Soviet Union's farm machinery industry speed-up production of mechanized potato harvesters.

Although the paper claims that "around 100,000 machines are in operation in (USSR) potato fields," apparently none of this equipment is completely mechanized. "The trouble is that too many people are involved in operating these machines," says the paper, and the implements "are unable to dispense with hand labor."

"Similar—essentially manual—methods" will be used to harvest 70% of the USSR's potato crop in 1961, according to the paper, although the prototype of a fully-mechanized combine suitable for harvesting potatoes "has undergone government tests . . . and received an excellent mark."

This machine has proved itself, the article continues, and the next step is mass production. "Everybody agrees with this—agrees and does nothing." But "meanwhile, obsolete machines are being produced at full speed." In the USSR's Estonian Republic, says the paper, agricultural planners have "even arranged for the mass production of horse-drawn potato diggers . . . despite the availability of mechanized harvesters."

"Can it be that the authorities will permit potatoes to be harvested by an obsolete method in 1961?" Economics Gazette asks at the conclusion of its article.

The 39-page collection of translations from USSR publications—"Soviet Agriculture"—is available from the Office of Technical Services. (Order 61-31518 from OTS, U.S. Department of Commerce, Washington 25, D.C., price \$1.25.)

### TIMING IMPORTANT

The University of Arizona has described as "worthless," some aspects of aerial application of pesticides as practiced in the state. In a recent cotton insect report, the University said that airplanes dusting and spraying in the middle of the afternoon when temperatures range from 104° to 112° F., cannot do an adequate control job. The report also observed that some airplane operators fly too low to secure good coverage, and also the low altitude prevented a wide swath to be made.

## Weed Society Names Chairmen of Sections

Chairmen of program sections of the Weed Society of America meeting scheduled for Dec. 11-14 have been announced by Dr. G. F. Warren, Purdue University, Lafayette, Ind. The conference will be held at St. Louis, Mo.

Sections and chairmen were announced as follows:

"Weed control in agronomic crops," Dr. David Staniforth, Iowa State University, Ames.

"Weed control in horticultural crops," Dr. Boysie E. Day, University of California, Riverside.

"Control of weeds and woody plants in rights-of-way and other industrial sites," Dr. F. W. Slife, University of Illinois, Urbana.

"Control of weeds and woody plants in pastures and rangelands," Dr. R. A. Darrow, Texas A&M College, College Station.

"Control of weeds and woody plants in forests," Dr. Paul Y. Burns, Louisiana State University, Baton Rouge.

"Ecological, physiological and edaphic aspects of weed control," Dr. W. K. Porter, Jr., Delta Experiment Station, Stoneville, Miss.

"Weed control in turf," Dr. E. C. Roberts, Iowa State University, Ames.

"Public health aspects of weed control," A. H. Fletcher, New Jersey State Department of Health, Trenton.

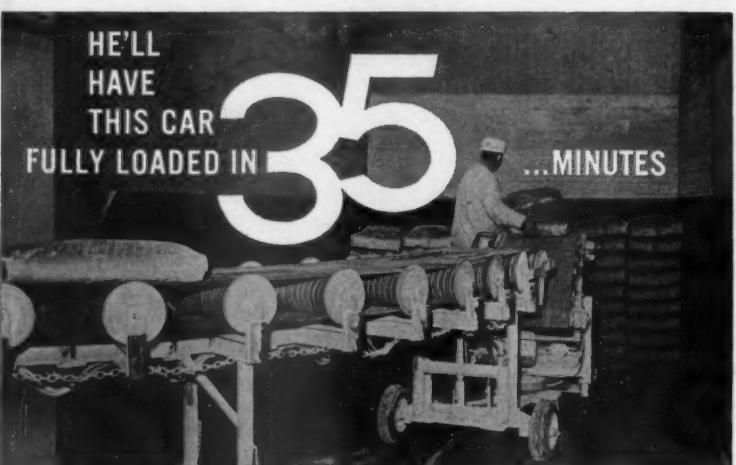
"Regulatory aspects of weed control," Dr. W. A. Davidson, U.S. Department of Agriculture, Washington D.C.

"Teaching and extension aspects of weed control," Dr. D. R. Peterson, University of Wisconsin, Madison.

"Control of aquatic and marginal weeds," Dr. Donald E. Seaman, U.S. Department of Agriculture, Fort Lauderdale, Fla.

Besides the regular program, research and education workers attending the meeting will tour the "Climatron" at the Missouri Botanical Gardens and the agricultural research laboratories of Monsanto Chemical Co.

The meeting headquarters will be at the Jefferson Hotel, with the North Central Weed Control Conference serving as hosts. Some 100 authorities will present papers during the three-day meeting.



### ...without help, using a POWER-CURVE Loader

Bag loading costs of eight cents a ton are not uncommon in plants using Power-Curve equipment. One man loads and stacks direct from the packer with no need to lift a single bag. Loads can be palletized or stacked in any pattern, also put into warehouse storage.

There are Power-Curve installations near you. Let us show you how your plant can benefit from a custom engineered Power-Curve loading operation.

Literature and engineering details sent on request.

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CONVEYOR COMPANY  
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By Al P. Nelson

**O**SCAR SCHOENFELD came down the street from his old fashioned bungalow, picking his teeth with a toothpick after the midday lunch and headed in the direction of the railroad tracks. Beyond the tracks lay a big grey, hulking building, with a wavering cloud of white dust over one corner.

It was the Fertile Fertilizer Co., makers of "Gro-Fast" fertilizer, a plant which Oscar and his partner, Pat McGillicuddy, had recently purchased. By selling their retail fertilizer store at Springdale and buying a fertilizer plant at Central City, the county seat, 25 miles from Springdale, Oscar and Pat had, in a manner of speaking, jumped from the minor to the major league in the plant food field.

Oscar walked home to lunch every day. He took his lunch hour after Pat did, and now as he entered the roomy and dusty offices, he noticed Pat was bent over his desk studying some papers.

"Oh, Oscar," said the tall Irishman eagerly. "I've got something to talk to you about."

"It isn't about spendink money, is it?" Oscar asked suspiciously. "If it is, I ain't interested."

Pat frowned. "Can't we ever have a discussion without you accusing me of spending too much money, Oscar?"

"I play it safe," Oscar growled. "I know you. I try to put out the fire when it is just smoking."

Pat sighed. "Well, I could never understand your ways, and I suppose I shouldn't try too hard now. But I do know, Oscar, that this is the time of the year when we have to do some promoting. We are selling lots of fertilizer now for fall plowdown, but when that's over we have to get lots of orders booked for spring delivery."

"Let's get paid first for the fertilizer we sell this fall before we give discounts for spring booking," Oscar warned.

Pat ignored this remark. "This firm is an old one in the county but you and I are new here, Oscar. We've got to make ourselves known. We have to win the confidence of farmers."

"We don't want the confidence of farmers that don't pay," Oscar snapped. "Go easy on that."

"Now how can we win the confidence of farmers?" Pat said. "We have published quite a few ads telling them of our ability and willingness to serve them. Now we have to be very friendly and helpful to them. I can think of no better way to get to know them better than to invite them to tour our plant and see how we make fertilizer. And then treat them to coffee and doughnuts."

"Why shouldt we feed them?" Oscar said. "Let them eat at home. We sell fertilizer, not doughnuts."

Pat looked irritated. "You've got to create good fellowship, and a tour and refreshments will do that. As we go through the plant with the touring farmers we have a chance to explain how good our fertilizer is and how it can help them make more profit from each acre."

"Who will show them through the plant?"

"I will, when I'm here, and you can help out when I am not here."

Oscar bristled. "I will not. I hav my books to take care of and figure out how much we save on discounts if we pay on time. Let those free

# OSCAR & PAT

loaders go through the plant by themselves."

Pat gazed at Oscar in amazement. "How can you expect to please customers the way you act to them? How can our business grow?"

Oscar's lips tightened. "Well, I don't go around giffing time and schtuff away like you do. I stick to business and tell farmers when they owe us money for what they bought from us. What more is there to business?"

The two partners glared at each other. "Oscar," said Pat almost frantically, "you don't understand. We

have to build this business. We have to get the jump on competitors. We've got to do things they aren't doing. We've got to sell farmers on the idea that our fertilizer is the best for them to buy."

"But all this sellink, all this advertising, it will make us go bust," snapped Oscar. "It will sendt our costs high."

"No, it won't. The more we sell, the more units we can spread our costs over," insisted Pat. "I'm startin' to help farmers take soil samples. Frankly, not enough of

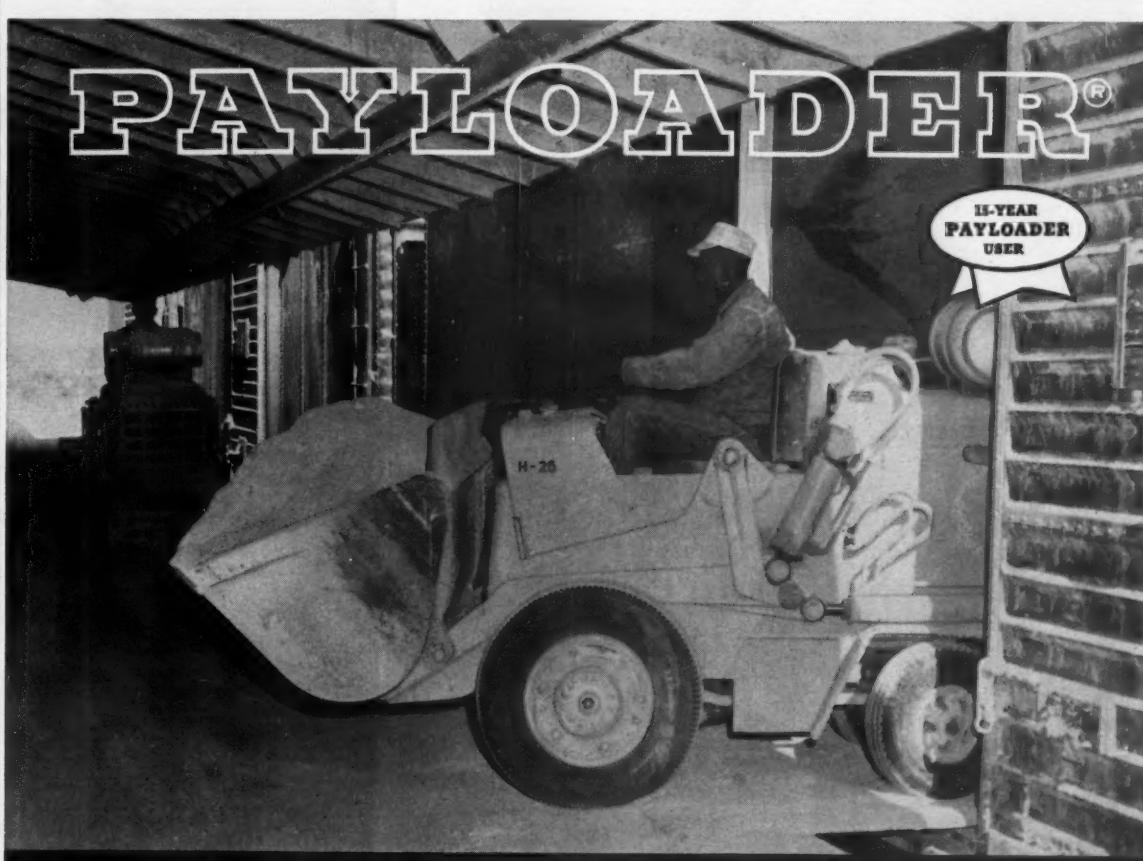
them will do it by themselves. So I am going to work long hours helping them, and keeping up with my sales work."

"I'll handle them one of these days," Pat said, through closed teeth, "but I have to get this soil testing done, too. Once a farmer gets his soil tested, with a fertilizer recommendation, he knows what his land needs, and then it will be easier for us to sell him."

"Who is goink to pay for having the samples tested?" Oscar asked suspiciously.

"We are. We can afford to pay for each sample if we get the business."

Oscar flushed. "No," he said, "I put my foot down on that. We are not goink to pay for soil testing. I do not believe in giffing and giffing



## "proven dependability keeps materials moving"

"We have been using PAYLOADER tractor-shovels since 1946 but we find that the H-25 is an all-around bigger horse," says J. T. Paul, Plant Supervisor for the Victor Fertilizer Company in Chester, South Carolina. "It has excellent digging power plus fast delivery speed—yet, it can be maneuvered in real close quarters to do the job that previously called for smaller loaders. In our operation, PAYLOADER equipment has given us continuous production service with outstanding dependability."

**VICTOR FERTILIZER** is a typical mixing plant. They serve an area within a 100-mile radius largely devoted to cotton, general agriculture and dairy industries. Their present PAYLOADER equipment consists of a new 2,500-lb. capacity Model H-25, two smaller HA's (2,000-lb. operating capacity) and a larger Model HE for all railroad car unloading, bagging and mixing duties.

**THE IMPRESSIVE REPORT** they give on the H-25's performance is typical, too, because it is the most

productive rubber-tired loader ever built in this size range:

**Mechanically**—it combines 2,500-lb. capacity, 6-ft. turning radius, full power-shift transmission, power-steering and power-transfer differential to move big tonnages even in close quarters.

**Maintenance**—Many special features have been "built-into" the H-25 PAYLOADER to protect it against costly downtime: A dry-type air cleaner system, cartridge type oil filters, sealed and self-adjusting hydraulic service brakes, parking brake enclosed in transmission, special grease and oil seals on all vital pivot points.

**WHY NOT CONTACT** your nearby Hough Distributor and have him demonstrate how the greater production, lower maintenance performance of an H-25 can reduce your cost in bulk handling? See him soon or return the coupon.

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the farmer efferythink to get his business. Use some of your time, if you want to, but, ach, we don't pay for samples. That's foolish."

The grey eyes of Oscar looked balefully into the flashing blue eyes of McGillicuddy. Finally Pat said, "Listen, Oscar, so long as I am in this company I am going to work my head off trying to promote and sell, because I believe that is the only way to make a business prosper and expand. Remember that."

Oscar swallowed. "Andt you listen to me, Irisher. I am goink to cancel any foolish thinks you do to built expenses. I do not belief in subsidizing the farmer. The government is already doink that, and that is enough. We got good fertilizer. Let the farmer come and buy it and pay the price we ask. No giffaways."

Tillie Mason, the office girl, came to the door of Pat's office. "Customers standing out in the yard are turning to listen," she said. "You two

are shouting. It's bad for business. And remember that agreement we had in the retail store? It goes here, too. If you want to fight go into the warehouse or plant. I get ulcers from your arguments and I can't stand them."

### New Pesticide Carrier Announced by Magcobar

A new granular carrier for use in formulation of both granular insecticides and herbicides has been developed by Magnet Cove Barium Corp. of Houston, Texas. The new carrier, "Granulex," comes in three mesh sizes. It is described as an extruded granular attapulgite carrier, suited to the formulation of both herbicides and insecticides in the 1% to 20% toxicant range.

Magcobar also produces a western bentonite for formulations in the lower toxicant range, and two attapulgite products for the upper toxicant range.

## FINES Through the Screen

Wireworms, like human children, eat what they like best in preference to what is good for them. This was discovered in studies of the tastes of wireworms carried out at the Canada Department of Agriculture's research station at Saskatoon, Sask.

Dr. G. R. F. Davis said the main purpose of the studies is to prepare poisonous bait for the wireworms. He said larvae of the prairie grain wireworms feed on germinating rye seed in preference to other germinating seeds. Rye seed doesn't give adequate nutrition but apparently the insects like it and the scientists would like to know why.

Sugars, simple proteins and fats were extracted from germinating rye seed by means of hot and cold water, ethyl alcohol and petroleum ether. These extracts were presented to the wireworms on paper discs but only the water extracts—simple proteins and various types of sugars—caused the larvae to bite.

Trying to narrow the field, the researchers found that several simple proteins at a concentration of 2% that caused other insects to bite, did not attract wireworms. But some common plant sugars at the same concentration did cause the wireworms to bite. In fact, when the sugar concentration was increased to 5%, the wireworms were attacking the treated discs as much as those discs that were treated with water extract of germinating rye seed.

Then the sugars and simple proteins were separated from the water extract and tested separately. Neither caused as much biting as the extract itself but the wireworms bit the spots treated with sugars more often than those treated with the simple proteins.

John D. McLeod, owner and operator of Tifton Fertilizer Works, Tifton, Ga., was recently elected president of the Tift County Chamber of Commerce. His term of office began with Sept. 1, 1961 and will run one year.

## HE'S STARTING QUALITY PHOSPHATES YOUR WAY

He operates a high-pressure water gun at Cyanamid's Brewster, Florida, phosphate operation. He's one of several hundred Cyanamid people who mine, process, research, deliver and service

phosphatic materials for your acidulation and mixed fertilizer business. These people put Cyanamid's more than 40 years of phosphate experience into products and services you can use.



As the giant dragline dumps just-mined phosphate ore, the operator directs a high-pressure stream of water onto the matrix to break it down to an easily-manageable slurry. The slurry collects in a "well" and is pumped through a pipeline to the washer plant. Slurry can be pumped efficiently over great distances, and thus helps make possible the manufacture of quality phosphate products in volume at reasonable cost.

### Services you can use

**Traffic Service:** Cyanamid traffic specialists are ready to route and ship your orders without delays. Their knowledge can save you money, and can make your operation run even more efficiently.

**Technical Service:** Cyanamid's staff of technical experts are constantly at your service. Make your formulation and production problems theirs. That's their job. **Sales Service:** Cyanamid sales representatives are available to work with and for you in expanding present markets or in establishing new markets.

### Products you can use

Cyanamid's phosphate business is the mining and manufacturing of the highest quality products for your mixed fertilizer requirements.

- Florida Natural Phosphate Rock
- TREBO-PHOS® — Triple Superphosphate
- Phosphoric acid—an economical source of  $P_2O_5$  for high-analysis fertilizers.

American Cyanamid Company, Agricultural Div., Princeton, New Jersey. \*TREBO-PHOS is American Cyanamid Company's trademark for its triple superphosphate.

In an article in "IMC World," employee publication of International Minerals & Chemical Corp., Orville L. Freeman, secretary of agriculture, makes some interesting comparisons between U.S. and Russian farms. He points out that farm plots still privately owned in the USSR amount to less than 5% of Russia's total acreage, yet these relatively few acres produce 65% of Russia's potatoes, 82% of its eggs, and 50% of its green vegetables.

Here are some additional figures quoted by the secretary:

U.S. farmers annually produce some 60% more than Russian farmers on 33% less planted acres and with only about one-eighth the number of workers. This is a comparison "of almost staggering significance," he said. Despite a smaller population and smaller labor force, the U.S. has 5 million more workers available for non-agricultural work because 6 million U.S. farmers far out-produce 48 million in Russia.

Mr. Freeman listed poor climate, inadequate capital, and the collectivist system as the three major factors in the inferiority of Russian agriculture.

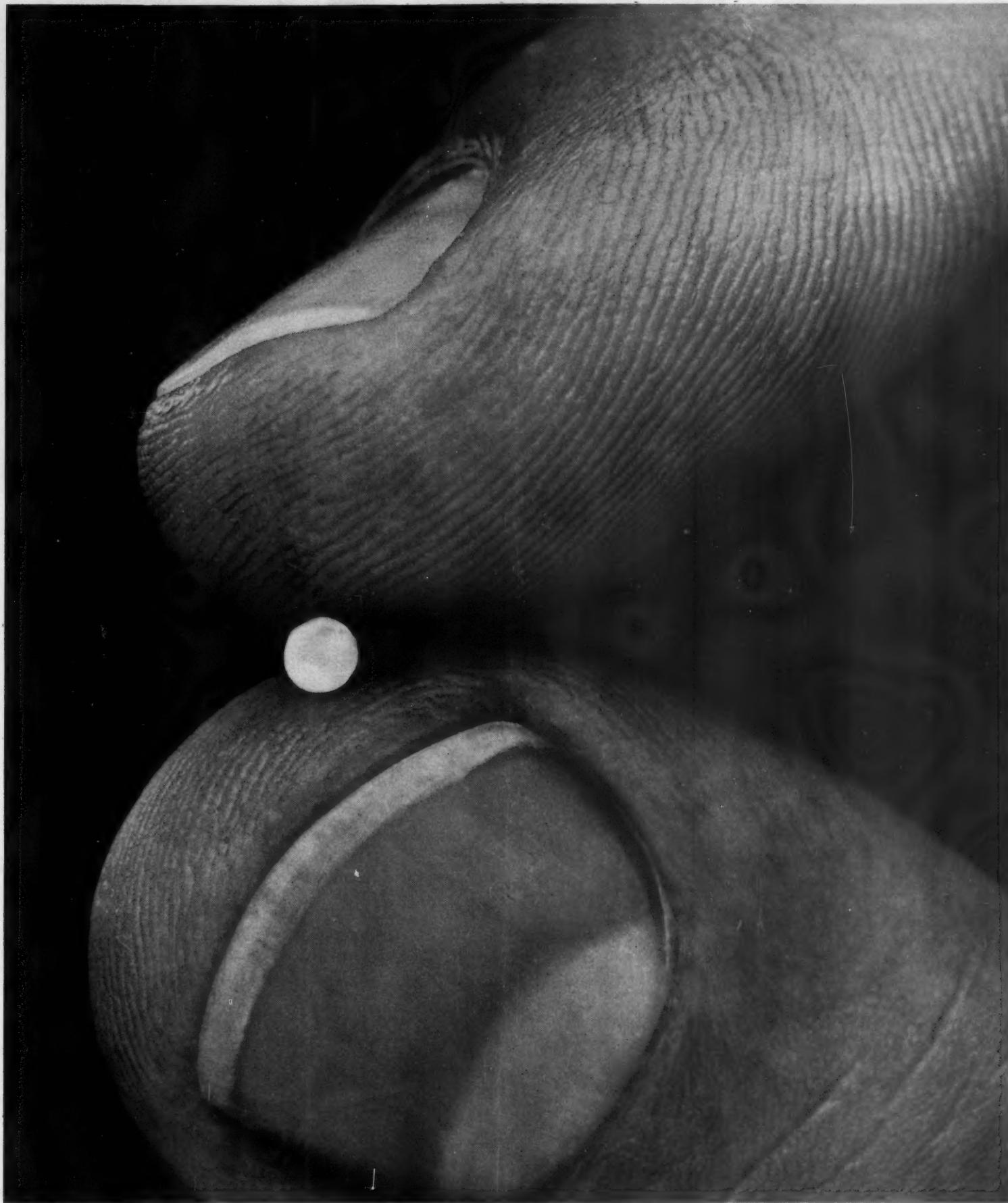
A woman in Louisville, Ky., recently filed suit against a railroad company because the latter had allegedly allowed some weed spray along its right of way, to drift to her tomato patch near by. The spraying was done on July 7, she said, and on July 17, she ate some of the tomatoes. A few days later, she became ill and had to get medical treatment.

Her asking price: \$10,000 compensatory damages plus \$5,000 punitive damages against the railroad.

Another potential infestation of khapra beetle in the U.S. was reported to be thwarted at the Great Lakes port of Duluth-Superior when a Spanish ship docked there was found to be infested with the insect.

According to E. L. Chambers, Wisconsin entomologist, the unwanted pest was found in most of the vessel's holds, as well as in storerooms, crew's quarters and in parts of the engine room. The ship was fumigated before it left port.

**CYANAMID**  
**PHOSPHATE PRODUCTS**



## From little urea prills big fertilizer profits grow

This remarkable urea prill, produced by Cobalez of Belgium, is probably the most economical and efficient source of solid nitrogen material available in the world today.

Belgian urea prills give you a guaranteed 46% nitrogen. The price per unit of nitrogen is comparable with competitive solid materials. What's more, the nitrogen is concentrated in a compact, uniform unit. Result? Excellent distribution. Easier handling. Substantial savings on transportation and storage.

Belgian urea prills are uncoated, yet so skillfully made they contain less moisture than coated material. They're free flowing; there's no dust problem. And you get maximum solubility (you can dissolve 880 pounds in 100 gallons of water at 68°F.).

*Is it any wonder H. J. Baker goes 3,000 miles to get them?*

You can buy Belgian urea prills in America right now. In quantity. With fast delivery assured. As the first step in seeing how much better they can do

the job for you—and how much bigger they can make your profits grow—send for a free sample and complete information. Simply write to the H. J. Baker office nearest you.

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# WHAT'S NEW

## IN PRODUCTS • SERVICES • LITERATURE

To obtain more information about items mentioned in this department simply: (1) Clip out the entire coupon in the lower corner of this page. (2) Circle the numbers of the items of which you want more information. Fill in the name and address portions. (3) Fold the coupon double with the return address portion on the outside and fasten the edges with a staple, cellophane tape or glue. (4) Drop in the mail box.

### No. 9456—Pesticide Granular Carrier

Magnet Cove Barium Corp. has announced a new carrier called "Granulex," for the formulation of both granular insecticides and herbicides. The makers say it is an extruded granular attapulgite carrier suited to the formulation of herbicides and insecticides in the 1% to 20% toxicant range. The makers also state that the new product has good flowability and breakdown characteristics. For full information check No. 9456 on the coupon and mail.

### No. 9462—New Tractor-Shovel Units

Two new four-wheel-drive front-end loaders are announced by The Frank G. Hough Co. They are Model H-60



with 1½ cu. yd. capacity and Model H-7-series "C" with 2½ cu. yd. capacity buckets.

According to the manufacturer, features of the new loaders are simplification of maintenance, safety and ease of operation, power-steering, power-brakes and power-shift trans-

missions. The H-60 offers a choice of gasoline or diesel power with engines developing 110 and 107 h.p., respectively. The H-70 series "C" is powered by a 148 h.p. diesel engine. Both are available with optional buckets, operators' cabs, rotary and blade snow plows and bucket teeth. For complete details check No. 9462 on the coupon and mail.

### No. 9463—Bag Closing Reference Table

A wallet size reference table for estimating the amount of materials required to close sewn open mouth multiwall bags is available from St. Regis Paper Co. It is called the "Closing Materials Calculator," serves as a guide for production, materials handling, purchasing, research, and engineering planning personnel. The calculator lists, for 1,000-bag lots, the amount of various materials required for bags ranging in face width size from 10 to over 24 in. Also listed are the amounts of carliner required for rail shipment of multiwall packaged goods. To obtain reasonable quantities of the calculator at no charge, check No. 9463 on the coupon and mail.

### No. 9460—New Lift Truck Series

Eight new models in their heavy-duty fork lift series of trucks are announced by Towmotor Corp. The new series includes units powered by gasoline, LP-gas, or diesel engines, available in wheelbases from 86 to 120 in., with load capacities from 10-

operations. The systems are said to be flexible and dependable, providing fast, accurate results, and eliminating hand operations. Each system is custom engineered to fit a specific application. For free copies of the manual, check No. 9472 on the coupon and mail.

### No. 9469—Indexed First Aid Kits

The General Scientific Equipment Co. has announced a new line of heavy-duty first aid kits with unit-wrapped and labeled items. Called the "G-S Unit-Type Kit," it has a facsimile index on the inside of the case lid for quick location of items and inventory control. Made of 20-gauge steel, the cases are designed for either permanent wall installation or portable service. They are available in sizes of 10, 16, 24 and 36 units, with standard assortment of first aid items or with "custom" as-

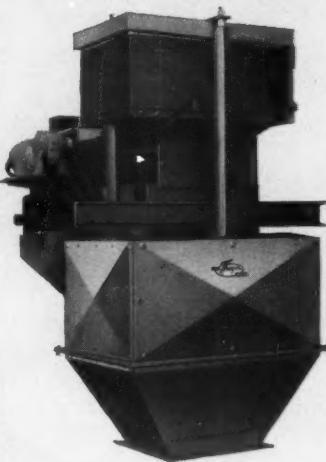


24,000 lb. The units feature a new low-profile, envelope-type styling which combines frame and body in one-piece construction. For copy of new 25-page catalog, check No. 9460 on the coupon and mail.

### No. 9459—Automatic Liquid Meter

A new automatic liquid meter is announced by Buffalo Meter Co. The new meter delivers a pre-set quantity of liquid at the press of a button. It can be used to actuate other meters to deliver pre-set quantities of liquids in any sequence; to start or stop pumps, and to operate solenoid valves, signaling devices, electric relays and other processing equipment to make the meter the master control center for a complete cycle of operations. It is available in a variety of sizes and capacities for a wide variety of corrosive liquids. For specific information check No. 9459 on the coupon and mail.

## STOP PROFIT GIVE-AWAY



### stay competitive with accurate Thayer scales

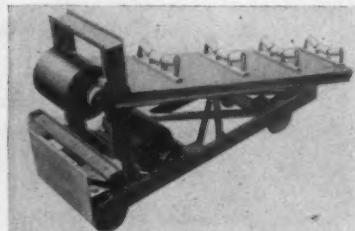
For 11 years a Florida fertilizer plant has kept costs down and profits up with 1 Thayer Scale. The Florida plant remains a keen competitor because of accurate weight control, low overhead and greater dollar return on its investment.

The Thayer Scale has required no maintenance and continues to give "new scale" accuracy in spite of millions of weighings of abrasive rock dusts.

Unlike conventional scales, the Thayer Scale has no knife edge pivots to wear and cause inaccurate weighing. The Flexure-Plate suspension system of the Thayer Scale cannot wear, requires no maintenance, and accuracy is guaranteed for millions of weighings.

Call or write Thayer Scale for recommendations on improving or maintaining your competitive position through precise weight control.

**BAGGING, BATCHING,  
METERING,  
CHECKWEIGHING and  
CUSTOM DESIGNED SCALES.**



as weighing 5,500 lb., with a 36 in. wide belt, and is said to be built expressly for high-capacity stockpiling operations, where a power-propelled tripper is required, but where electrical conductors or trolley wires are undesirable. It is 18 ft. long, 4½ ft. wide and 7 ft. high. For complete details check No. 9473 on the coupon and mail.

### No. 9472—Automatic Weight Sensing

An 8-page, illustrated reference manual for the application of automatic weight sensing systems is made available by the Exact Weight Scale Co. The company says the manual shows how the principle of weight sensing can be utilized for various

Send me information on the items marked:

- No. 9421—New Hand Truck
- No. 9441—Conveyor Feeder
- No. 9454—Pesticide Granular Carrier
- No. 9457—Liquid Fertilizer Pumps
- No. 9459—Automatic Liquid Meter
- No. 9460—New Lift Truck Series
- No. 9462—New Tractor Shovel Units
- No. 9463—Bag Closing Reference Table
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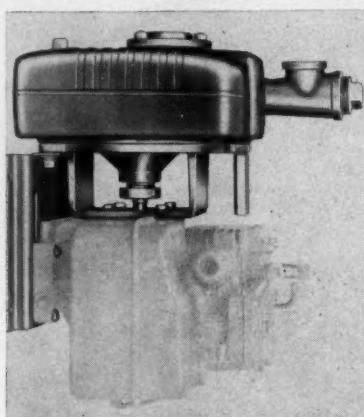
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### No. 9421—New Hand Truck

A new hand truck designed for tilting of heavy loads has recently been announced by Valley Craft Products, Inc. The manufacturer says the truck is designed primarily for handling bags of materials stored on pallets. It is equipped with a special shoe which automatically locks it into tilting position as the truck is moved vertically against the load. The truck is also available with two-wheel brakes for safety when moving heavy loads down ramps. Construction is of heavy gauge steel tubing, with 10 in. replaceable hard rubber, ball bearing wheels. For complete information check No. 9421 on the coupon and mail.

### No. 9474—Liquid Metering Pump

A new solution metering pump for delivering minute quantities of liq-



uids is being marketed by Beckman Instruments, Inc. The pump is available in four ranges: 0-2, 0-5, 0-10, or 0-20 milliliters per minute. The manufacturer says flow can be set with an accuracy of plus or minus 2% of the pump's full range, and that repeatability is better than plus or minus 0.5% of rated capacity. Construction is said to be of highly inert ma-

terials to permit handling of most corrosive fluids and to prevent solution contamination. Mechanically actuated valves designed to insure leak-free performance without high back pressure are another important feature of the pump. For complete information check No. 9474 on the coupon and mail.

### No. 9441—Pneumatic Conveyor Feeder

A new model NF-6-168 pneumatic conveyor feeder has just been announced by National Air Vibrator Co. The new feeder measures 16 ft. 8 in. in length, and has a 4 by 24 in. trough that is said to move bulk or granular material or assembly parts at capacities of up to 30 tons an hour, with easy change of flow rate. It is said to incorporate the manufacturer's patented one-piece design and has a silent-type vibrator piston as the only moving part. For complete details check No. 9441 on the coupon and mail.

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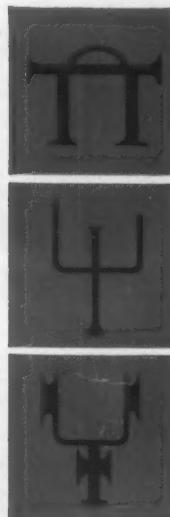
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Medieval alchemists' symbols for potash and cibbed ashes

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## INDUSTRY VIEWPOINT

Continued from page 25

research facilities and personnel. This could be a real disservice to the users of plant food," he adds.

The competitive factor in the situation was mentioned by a number of people in the industry who commented: "What has been learned by manufacturers through their research facilities, about the value of secondary elements, the quantities to be used and the most productive forms to use in their formulas are things they do not wish to divulge to competitors, many of whom may do very

little, if any, real research," was the comment made by one manufacturer. He continues:

"There is as much logic in the proposed regulation as there would be in telling manufacturers of farm equipment, gasoline, oil additives, and the many other products bought by rural and urban users, that such products must comply with certain minimums with detailed specifications accompanying every product."

**"In our opinion the proposed regulation amounts to over-regulation"**

and goes further than the state regulatory bodies go on mixed feed. Feed manufacturers list the various ingredients on their package, but not the amounts, thereby retaining the benefits gained through costly private research and experience. We see no reason why plant foods should have any more regulation than feeds.

"The power to interpret the meaning of the words, 'in any manner or form' in Section 1 puts industry in the precarious position of never knowing where it stands in telling prospective users about new and improved products.

"The terms 'complete' and 'balanced' in Section 4 have been in general use for nearly forty years by industry, farm and garden writers, and the general press. It is inconsistent to decide suddenly such terms are misleading. If the Federal Trade Commission has ever questioned such terms as being misleading, I am not aware of it.

"One of the reasons stressed by the control people for having this regulation is that unscrupulous manufacturers might take advantage of the consumer by claiming their products contain secondary elements without actually putting them in or putting them in in such minute quantities as to be completely ineffective. In an industry as highly competitive as ours, such manufacturers would soon find themselves without customers and without a business.

"Finally, unnecessary regulation of the type being proposed, with such broad powers of interpretation and enforcement, will increase the complexity of manufacturing, marketing, and distribution. These, plus the additional costs of administration by the regulatory bodies, are bound to be reflected in higher costs to the consumer.

"The highly competitive nature of our industry has kept down the price of plant food in proportion to what farmers and urban gardeners pay for the other necessities they buy. We hope this is given the most careful consideration by those attempting this over-regulation."

Aside from the angles enumerated by the spokesman quoted above, other observers noted that there is little need to "protect the consumer" from possible fraud or deceit at the hands of manufacturers, since the nutrients in question are just what their name implies: Minor.

Just as their nutritional importance is minor, so is their concentration in fertilizer formulas, a knowledgeable manufacturer pointed out. "In some cases, a few ounces per acre is sufficient to produce the desired results," he adds.

"It seems to me that the farmers are not particularly concerned about the fact that today's fertilizers tell little more than the primary content of the bagged material. . . . No one fully understands the plants' need for specific minor elements, or what combinations are most important to different crops. It appears doubtful that a farmer will be influenced greatly in his selection of plant food for his crops if he is told that one brand contains 0.6% iron per ton while another brand may contain a little less or a little more."

"This labeling, in fact, could be confusing to farmers," the industry spokesman went on. "Using the example of relatively low-cost iron, a farmer may be made to believe that a high iron content plant food is a 'bargain'. Actually, however, a smaller quantity of iron in better balance with other minor elements may be the most beneficial food for his soil and crop."

Pursuing the situation further from the farmers' viewpoint, another industry representative pointed out that farmers now have more than 300 grades of fertilizer available (based on the nitrogen, phosphoric acid, pot-

ash analyses) and the addition of minor element figures would at best be confusing and probably of no value whatsoever to the farmer. It is doubtful that the farmer would be interested in this information."

Touching again on the subject of research, another commentator declared that manufacturers are investing thousands of dollars in research each year, both in their own laboratories and in sponsoring research in colleges, universities and other research organizations. "Much of this effort is aimed at learning more about the minor elements," he said.

"If we as manufacturers are required to print the minor element content on each bag, it will stifle any desire to improve the fertilizers we market through further minor element research. Results of research printed on the bag—with no patent protection—mean we would have no way to realize the cost of investment in research."

One manufacturer pointed out that his company had sold its specially-developed fertilizer, containing minor elements, on the basis of results. An impressive record of repeat sales gains for that fertilizer proved that the farmer can and will readily decide for himself what particular fertilizer is best for his particular soil and crops.

"The proposed minor element declaration at first sounds like a simple matter," he opined, "but enforcement of the laws would be 'next to impossible'."

Sampling and analyzing minute quantities of the trace elements immediately present problems, a manufacturer pointed out. He cited the following examples:

1. Chemical tests for water-insoluble boron carriers are extremely difficult to perform;

2. Spectrographic analysis is nearly impossible because of the masking effect of certain elements; and

3. Many soluble elements added at the time of manufacture will not remain in soluble form in the mixture.

"Enforcement will encounter other problems, too," he said, citing definition of the term "available" as an example.

"Iron sulphate, which is soluble in water and would probably be considered as 'available', is actually not available to plants in alkaline soils.

"Conversely, chelated iron, generally available and valuable in an agronomic sense, would also carry the 'available' label, but without qualification.

"Further problems would arise because of the solubility, controlled solubility or water insolubility of the various compounds.

"Solubility is not always desirable, as for example, water soluble salts (which can do more damage than good). In many cases, a material with controlled solubility should be used. And in addition, water insoluble boron compounds, while more expensive, are safer and more efficient when applied to sensitive crops and sandy soils.

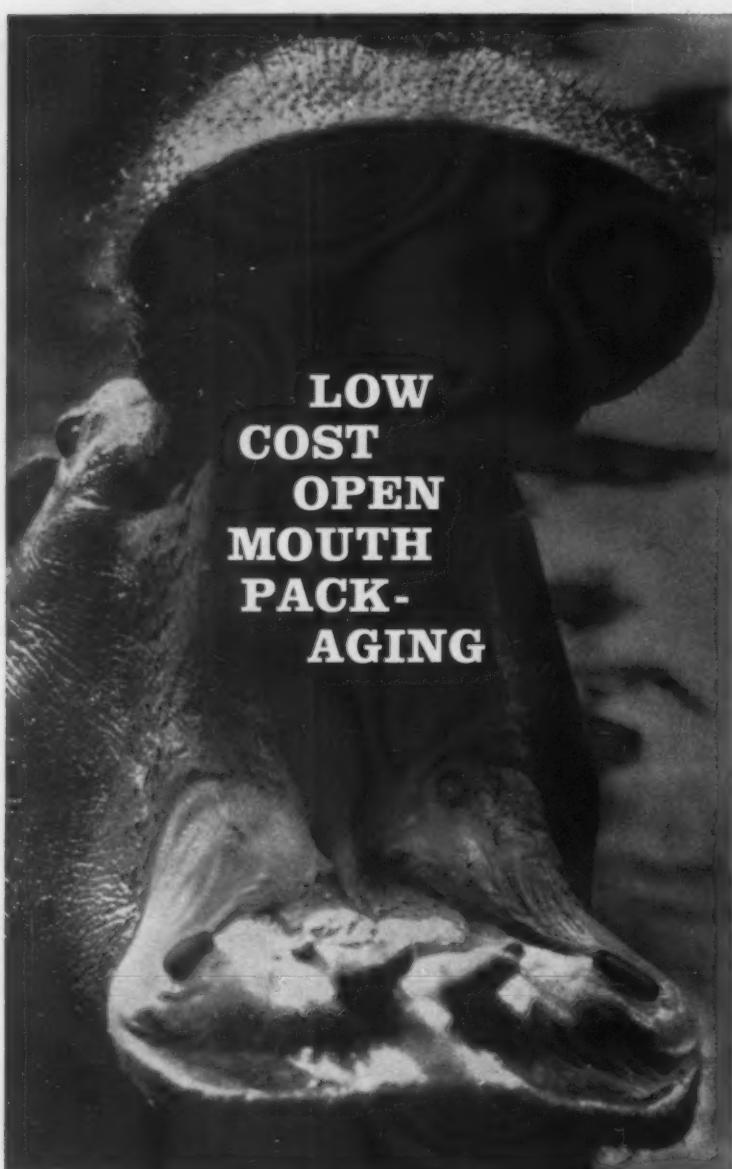
"Additional problems arise because the subject of chelation has not been included in some of the proposed labeling programs proposed to date."

One fertilizer manufacturer said that while these materials would not always meet minimums (since quantities as small as a few ounces per acre are often highly effective) they may be many times as effective as other materials which are easily identified in minimal quantities.

"Many within the industry feel that the efforts to impose additional bureaucracy upon the industry is 'unfair'. The fertilizer industry is closely regulated by state agencies and a minor element declaration would be only an additional burden on the industry."

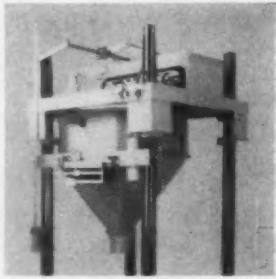
The industry spokesmen emphasized almost to a man that additional

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regulation would be expensive to the states—which would mean more and higher taxes to support enforcement. The source of this additional money would of course be the taxpayers, including the manufacturer and the farmer, they indicated.

The manufacturers contend that the farmer already is provided a number of avenues through which he may seek assistance in selecting the grade and brand of fertilizer that will best serve his particular needs. Extension services, county agents, agronomists and farm planners are available throughout the 50 states under government-sponsored tax-supported programs, they point out.

"With all the regulations already effected on the fertilizer industry, plus the fact that fertilizer has for sometime been a 'buyer's market,' it seems incongruous to say that there is a need to protect our customers from us. We have done business directly with the farmers for years, and we're in business for the long haul. For the reasons already mentioned, we cannot see how minor element declaration will be of any service to the farmer or to agriculture as a whole," one large manufacturer stated.

## CONTROL OFFICIALS

Continued from page 25

companies in the region. A uniform policy for the labeling of plant foods in the region was developed. It included a list of twelve elements other than N, P and K for which claims would be allowed and set a minimum percentage of each which could be guaranteed.

"On March 15, a 4-state fertilizer conference of agronomists and fertilizer officials was held in Richmond, Va., for the same purpose. The agreement reached at that conference was similar in some respects to that of the North Central Region but also differed in others, including the minimum levels of micronutrients which would be permitted on the label.

**In early June, the Association of Southern Feed and Fertilizer Control Officials meeting in Lexington, Ky., discussed the subject at some length but found they were divided in their viewpoints as to the policy that should be followed. R. Z. Rollins presented details of California's long experience in the distribution of secondary and micronutrients. It was his opinion that the North Central policy could be improved by raising some of the minimum levels and deleting reference to 'available' forms of the nutrients.**

"Meanwhile, hearings had been held in several states of the North Central Region to adopt the proposed uniform regulations under the respective state laws. At these hearings certain members of the industry had voiced serious objections to the proposed rule which had been developed in February. Nevertheless, five of the states persisted in their view that the regulation should be adopted and indicated this by passing a resolution at Omaha, Neb., on July 26 to make it effective Sept. 1, 1961.

"They resolved, further, that the other states of the North Central Region be urged to consider the same uniform action. Texas held a hearing early in August to adopt rules under its new fertilizer law effective Sept. 1; the proposed rules, included a modification of the North Central proposal.

"In view of this activity, the committee on fertilizer guarantees and tolerances of the Association of American Fertilizer Control Officials arranged a meeting for Aug. 25 at the Sherman Hotel in Chicago to attempt to provide a basis for greater uniformity in the state and regional requirements. It was felt that such basis might be found if a small group

of well-informed individuals representing the different interests and regions could sit down together and exchange views.

"The National Plant Food Institute was asked to name a group representative of the industry; representatives of the Soil Science Society of America and the American Society of Agronomy were asked to help select a group of state and federal agronomists; and the committee on fertilizer guarantees and tolerances was expanded to encompass the views of all regions by inclusion of the president, vice president and a delegate from California. . . . Of the 26 persons requested to attend, 22 were present at the meeting as follows:

### Representing the A.A.F.C.O. Committee on Guarantees and Tolerances:

**Rodney C. Berry**, department of agriculture, Richmond, Va.; **Dewitt Bishop**, California department of agriculture, Sacramento, Cal.; **B. D. Cloaninger**, Clemson Agricultural College, Clemson, S.C.; **W. L. Hill**, U.S. Department of Agriculture, Beltsville, Md.; **J. W. Kuzmeski**, University of Massachusetts, Amherst, Mass.; **Bruce Poundstone**, University of Kentucky, Lexington, Ky., and **F. W. Quackenbush**, Purdue University, Lafayette, Ind. (chairman).

### Representing Agricultural Experiment Stations (State and Federal):

**J. W. Fitts**, University of North Carolina, Raleigh, N.C.; **Bert A. Krantz**, University of California, Davis, Cal.; **John Pesek**, Iowa State University, Ames, Iowa; **F. G. Viets**, U.S. Department of Agriculture, Ft. Collins, Colo., and **M. T. Vittum**, New York A.E.S., Geneva, N.Y.

### Representing Plant Food Industry:

**G. L. Bruton**, Ferro Corp., Cleveland, Ohio; **James H. Culpepper**, Smith-Douglas Co., Inc., Norfolk, Va.; **H. Gordon Cunningham**, Tennessee Corp., Atlanta, Ga.; **James A. Naftel**, U.S. Borax & Chemical Corp., Auburn, Ala.; **M. Dwight Sanders**, Swift & Co., Chicago, Ill.; **R. P. Thomas**, International Minerals and Chemical Corp., Skokie, Ill., and **S. F. Thornton**, F. S. Royster Guano Co., Norfolk, Va.

### Observers:

**Paul T. Truitt**, president, National Plant Food Institute, Washington, D.C.; **S. L. Tisdale**, The Sulphur Institute, Washington, D.C., and **W. L. Nelson**, president, Soil Science Society of America.

"At the meeting it appeared initially that there was little basis for agreement on a policy which would be acceptable to all regions. However, after much discussion it was agreed that:

"(1) The use of micronutrients in mixed fertilizers should be regulated;

"(2) Sources of the micronutrients guaranteed should be shown on the registration form for the information of the state official;

"(3) The distributor of a plant food should be allowed to list on his label only 15 elements including nitrogen, phosphorus and potassium (those for which plant responses are obtainable);

"(4) All secondary and micronutrients should be guaranteed on the elemental basis; and

"(5) Warning or caution statements should be required for molybdenum and water-soluble boron above certain levels.

"A discussion of minimum levels for the individual nutrients then followed. It became clear that minimum levels which might be used as insurance to prevent a deficiency of nutrients in the soil would not be suitable minimum levels in products which are intended to correct a deficiency already in existence. It was agreed that sound policy would be to specify minimum levels for the preventive type of product, but that these levels should not be construed as adequate for correcting known deficiencies. In the latter case, agronomic advice should be obtained con-

cerning the specific elements and the quantities of each needed.

"A statement of policy was finally drafted in the form of a proposed regulation for adoption under state fertilizer laws and in language appropriate for inclusion as a regulation under the uniform bill which is now law in a majority of the states. It was approved unanimously by all persons present at the meeting."

## Escambia Urea Production Scheduled for Jan. 1, 1962

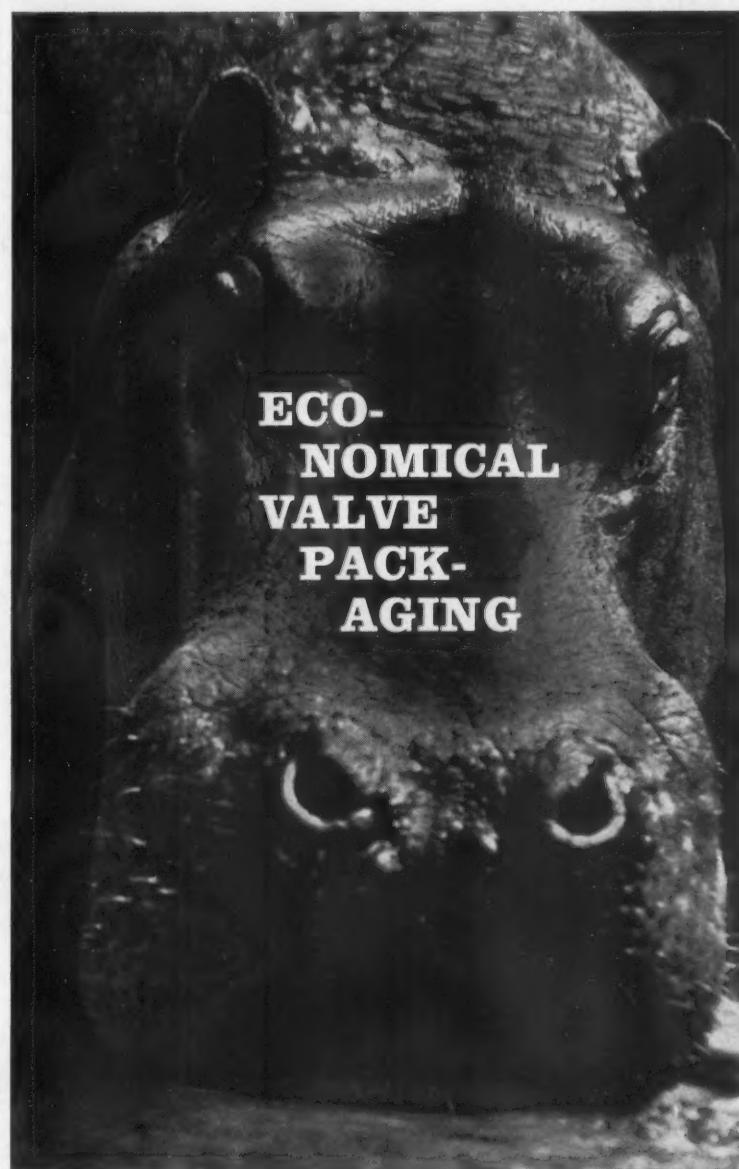
Escambia Chemical Corp. will begin manufacturing urea solutions Jan. 1, 1962, it was announced recently by

R. U. Haslanger, company president.

A new plant is nearing completion at Pace, Fla., near Pensacola, where Escambia's other products are produced.

The plant will have a rated capacity of 20,000 tons a year and the entire output will be used in Escambia's Bay-Sol ammoniating solutions or in Ammo-Nite direct application solutions. Mr. Haslanger said Escambia has no plans at present for manufacturing solid urea.

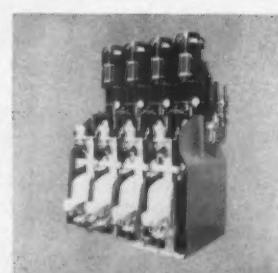
The new urea plant is the third general expansion in Escambia's nitrogen operations during the past 12 months, Mr. Haslanger said. The company has increased its ammonia capacity 15 to 20%, and storage capacity for nitrogen materials 30%.



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## Industry Counterattack . . .

### Remind Pesticide Critics They'd Soon Be Hungry If All Crop Chemicals Were Banned

**T**HE PESTICIDE business has been described as a mirror having many faces, the likeness depending upon who's looking into it. The farmer sees it as the provider of products to spare his crops from destructive pests; the nature-lover may regard it as a destroyer of wildlife and an upsetter of nature's balance; the housewife may be influenced to see the industry as a sinister source of poisonous products likely to be in the food she serves her family.

But to many writers seeking sensational stuff to fill their columns, pesticides become destruction personified . . . the champion polluter of streams, a threat to human survival comparable to the hydrogen bomb, cause of mental illness, contributor to nervousness, heart disease, cancer.

It is difficult to keep a cool head in the heat generated by the swirling accusations being tossed into the public consciousness and continually stirred by so many cranks. But the industry has succeeded not only in keeping a cool head, it has calmly proceeded to move ahead with research, testing, and introducing new products with built-in safety features. And it hasn't been easy. Nor has it been inexpensive.

The trade knows well the cost of discovering, developing, testing, and marketing new products. The pharmacological and toxicological testing of substances to establish adequate proof of safety may require large numbers of animals to be put on test diets for two or more years. The cost of a full-dress toxicological investigation for a new and unknown substance has been estimated variously at between \$80,000 and \$100,000. And if a material under test is even SUSPECTED of being a carcinogen, the tests may have to drag on for as long as seven years.

But the point is, the tests are thorough, complete, and to the satisfaction of the U.S. Department of Agriculture and the Food and Drug Administration. The public has been given this information from many sources, but matter-of-fact presentations of this type of intelligence seem completely incapable of competing with the scare copy ground out by professional alarmists. These latter simply exploit public apprehension, plant seeds of suspicion and fan the always-present coals of fear of the unknown.

Clippings from newspapers circulated in many parts of the nation attest to the reality of the continuing war against the use of pesticides. All of us have seen them, all of us wish there were some way to strike back and to get the truth across. "The facts about pesticides just aren't spectacular enough to catch the public fancy," one observer noted in a recent conversation.

Yet, many of the facts might be made spectacular. Perhaps the housewife would be interested in knowing that, without pesticides, the apples she buys at the supermarket would be fewer, costlier, wormy, and scabby. Some fruits and vegetables would be in such short supply that their price would be prohibitive. Probably most housewives have forgotten the situation in 1946 when late blight ruined the tomato crop in the eastern part of the nation. In ten states, 50% of the crop, worth \$25 million, was lost.

The public has become so conditioned to plentiful food supplies and flawless fruits

and vegetables, so far as insect and plant disease damage is concerned, that many of its younger members simply have never experienced anything different. It is difficult to impress them on the role played by pesticides in making such bounty possible.

Maybe the situation justifies the industry's employing the same "scare" method of shocking the public into a realization that without chemical pesticides, we could not possibly grow enough food to feed America's continually expanding population. As B. F. Bowman of American Cyanamid Co. pointed out in a talk earlier this year, "crop production would be largely consigned to the almost infinite varieties of vermin which eternally prey upon all the foods grown for the nourishment of mankind."

One of the most frustrating problems involved with getting across the importance and worthiness of pesticides is the complexity of marketing food products. The long line of handling and processing between farm and table prevents the great bulk of urban dwellers from associating the control of agricultural pests with their own daily food supply. They thus become inclined to think in terms of what deleterious substances might be in the food they eat, rather than what the problems might be in producing the fruit or vegetable in the first place. Mention to many city dwellers the problem of growers in controlling insects and diseases which would destroy their crops, and a shrug of the shoulder is often the only reaction.

The lack of communication between farm and city is a well-known problem. Some of it is inevitable, because of the differences in the ways of life of the two groups. But when it comes to a point where restrictions on pesticide use may prevent protection of crops from destructive pests, it is time the public took note.

Some in the trade have suggested that the pesticide industry should "fight fire with fire" when it comes to jarring the public into a consciousness of what pesticides mean to every consumer of agricultural products. Also the contributions of pesticides to the control of malaria and sleeping sickness should be heralded. So also should the role of chemicals be noted in holding back serious infectious diseases through the control of rodents and flies. Maybe the "scare" stuff could be used FOR pesticides!

Far from taking a "do nothing" attitude, the pesticide industry has issued many statements, quoted scores of knowledgeable scientists, prepared interview records for distribution to radio stations all over the country, and TV programs have shown viewers some of the advantages of pesticide use. Add to that attractive movies in sound and color plus well-written booklets and pamphlets, and the whole outlay totals an impressive piece of work.

As the NAC Assn. meets at Hot Springs, Va., soon, many of these matters will be taken up with key people in the Department of Health, Education and Welfare, the U.S. Wildlife Service, and even with ladies on the program who will represent the thinking of housewives. Out of this meeting is likely to come additional information and hints on how to cope with the public relations problem which appears to be one of the industry's most crucial at the present time.



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**TWO NEW LEADER L-22S FERTILIZER** bulk spreading boxes in use this spring only, excellent shape. Two Chief bulk fertilizer spreading boxes, completely rebuilt. For further information write Box 282 or call DI 4-5181, Stevens Point, Wis.

### SITUATIONS WANTED

**UNIVERSITY TRAINED AGRICULTURAL**—ist with over 15 years' sales experience desires sales position western U.S. (will travel). Address Ad No. 7250, Croplife, Minneapolis 40, Minn.

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**SALESMAN FOR AGRICULTURAL CHEMICALS**—Nitrogen. Experienced in field sales of nitrogen products, including the selection and installation of nitrogen stations and establishment of merchandising programs. Will supervise new program and liquid fertilizers. This is an excellent opportunity for an aggressive and ambitious man with nitrogen sales background. Salary basis. Send complete resume, including salary requirement to Ad No. 7310, Croplife, Minneapolis 40, Minn.

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#### Midwest Fertilizer Co.

Applicant must have B.S. degree in agronomy with sales management experience. Excellent opportunity in growth organization. Prefer applicant in the 35 to 45 age group. Our employees know of the placement of this advertisement. Refer to—

Ad No. 7282, Croplife  
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### Armour Orders 120 New Aluminum Tank Cars

Armour & Co., Chicago, recently ordered 120 aluminum tank cars from General American Transportation Corp., the two firms report. Each unit has a capacity of 10,000 gal., insulated with 4 in. of fiberglass, for carrying liquid nitrogen.

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## Meeting Memos

- Oct. 9-11—Western Agricultural Chemicals Assn., annual meeting, Hotel Claremont, Berkeley, Cal.
- Oct. 12-13—Northeastern Fertilizer Conference, Chicopee, Mass.
- Oct. 16-20—Fertilizer Section, National Safety Council, annual meeting, Pick-Congress Hotel, Chicago.
- Oct. 25—Annual Conference on Chemical Control Problems, sponsored by National Plant Food Institute, Woodner Hotel, Washington, D.C.
- Oct. 25-26—Association of American Fertilizer Control Officials, 15th annual convention, Woodner Hotel, Washington, D.C.

- Oct. 27-Nov. 1—Exposition of Chemical Industries, 28th meeting, New York Coliseum, New York City.

- Oct. 29-Nov. 1—National Agricultural Chemicals Assn., 28th annual meeting, Homestead Hotel, Hot Springs, Va.

- Oct. 30-Nov. 1—Fertilizer Solutions Assn. annual convention, Edgewater Beach Hotel, Chicago, Ill.

- Nov. 2-3—Pacific Northwest Plant Food Assn. annual convention, Hotel Gearhart, Gearhart, Oregon.

- Nov. 6—South Carolina Plant Food Educational Society, Clemson House, Clemson Agriculture College, Clemson, S.C.

- Nov. 7-10—Packaging Machinery Manufacturers' Institute Show of 1961, Cobo Hall, Detroit, Mich.

- Nov. 8-10—Fertilizer Industry Round Table, Mayflower Hotel, Washington, D.C.

- Nov. 12-14—California Fertilizer Assn., thirty-eighth annual convention; Jack Tar Hotel, San Francisco.

- Nov. 13-14—Oklahoma Plant Food Educational Society annual dealer conference, Tulsa Hotel, Tulsa, Okla.

- Nov. 14-17—Mexican Assn. of Insecticide and Fertilizer Manufacturers, Hotel La Perla, La Paz, Lower California, Mexico.

- Nov. 27-30—Entomological Society of America, annual meeting, Miami, Fla.

- Nov. 27-30—American Society of Agronomy annual meeting, with Soil Science and Crop Science Societies included, Sheraton-Jefferson Hotel, St. Louis, Mo.

- Dec. 4—Washington Liquid Fertilizer Dealers Assn., annual meeting, Hotel Davenport, Spokane, Wash.

- Dec. 6-7—Alabama Soil Fertility Society, Whitley Hotel, Montgomery, Ala.

- Dec. 7-8—Michigan Fertilizer and Lime Conference, Kellogg Center, Michigan State University, East Lansing, Mich.

- Dec. 11-14—Weed Society of America, annual meeting, Sheraton-Jefferson Hotel, St. Louis, Mo.

- Dec. 14-15—Ohio State Fertilizer and Lime Conference, Agricultural Administration Building, Ohio State University.

### 1962

- Jan. 3-5—Northeastern Weed Control Conference, 16th annual meeting, Hotel New Yorker, New York City.
- Jan. 10-12—Agricultural Ammonia Institute, eleventh annual convention, Sheraton-Jefferson Hotel, St. Louis, Mo.
- Jan. 17-19—Southern Weed Conference, 15th annual meeting, Hotel Patten, Chattanooga, Tenn.

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